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AUTHOR Van Zant, John L.; Lawson, William H.
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ABSTRACT

The final report on Phase 1 of the Manpower Projection Model (MPM) Project provides a guide for implementation of the model system by area Vocational Education Practitioners within any Standard Metropolitan Statistical Area (SMSA). A cooperative effort between Ventura County Superintendent of Schools Office and the Community College District, the project was designed to identify and develop a short-term manpower projection system for the Ventura County SMSA and its adjacent labor-market areas. Six steps were followed in the development of the MPM system: (1) familiarization with national publications and National Bureau of Labor Statistics (BLS) Methodology, (2) development of active support from local planners, (3) description of budget structure, (4) contact made with Department of Human Resources and Development and Data Research Section, (5) determination of responsibilities of MPM staff, and (6) incorporation of MPM information into local planning. Linking the local MPM system to the BLS National Industrial-Occupational (I-O) Matrix enables the national industry and occupational trends to be superimposed on the local SMSA, thus relating job market shifts to the local area. The "Early Warning" I-O Matrix provides an early look at changes in the local labor market. The employer validation process and extrapolation technique were also used in determining projections. Ten appendixes of related materials are included. (AG)

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MANPOWER PROJECTION MODEL PROJECT

VENTURA COUNTY
SUPERINTENDENT OF SCHOOLS

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JAMES F. COWAN, SUPERINTENDENT

A Project Developed With Assistance From
The California State Department of Human Resources Development
Vocational Education Act of 1968
Public Law 90-576
Part C

PROJECT CO-DIRECTORS

John L. Van Zant
Director of Occupational Education
Ventura County Superintendent of Schools Office

Dr. William H. Lawson
Associate Dean of Instruction
Moorpark College

CE 000 894

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PREFACE

This report is designed to serve a dual purpose: (1) to fulfill the contractual requirement of Part C: VEA Contract #56-10561-C007-71 which requires a final report on Phase I of the Manpower Projection Model (MPM) and (2) to serve as a step-by-step guide for area Vocational Education Practitioners for the implementation of the Manpower Projection Model (MPM) system within any Standard Metropolitan Statistical Area (SMSA).

This report format, for steps one through six, was designed so that the left column indicates the necessary steps for implementation, and the right column details the actual steps taken by the Manpower Projection Model (MPM) Staff.

ACKNOWLEDGEMENTS

The Manpower Projection Model (MPM) Project was a team effort comprised of many people. The principal architects for the project were Miss Odessa Dubinsky, Manpower Analyst, Southern California State Department of Human Resources Development and Dr. Paul Sultan, Professor of Economics, Claremont Graduate School. Miss Suzanne Sadowsky, Regional Economist for Bureau of Labor Statistics and Dr. J. Philip Adams, Associate Professor of Economics, Cal Poly San Luis Obispo, provided continuing interest and support in the model as it developed. Dr. Adams also served as the project's Evaluator. Richard Dempsey, Coordinator of Tomorrow's Manpower Needs Studies, Bureau of Labor Statistics (BLS) in Washington, D.C., was most helpful in providing information on the Bureau of Labor Statistics (BLS) national occupational projection program. Dr. John Virgo, Claremont Graduate School, also contributed many long hours in managing the computer for producing the first "Early Warning" matrices print-outs.

The local staff was composed of: Mr. Ray Pierce, Assistant Project Administrator; Mrs. Florine Matthews, Project Analyst; Mr. Dennis Bean, Project Researcher; Mr. J. B. Robb, Project Occupational Analyst/Technical Writer; Miss Margaret Collins, Resource Center Manager; Mrs. Melodie Campbell and Miss Cherie Pressley, Project secretaries and Miss Maria Pereira, student secretary. All of the staff contributed the many long hours needed to keep the project together and moving to its completion.

Last, but not least, the project directors wish to thank the many Vocational Education Practitioners in Ventura County and throughout the state who contributed much valuable advice and many recommendations for the Project.

September 30, 1972
JVZ/WHL

ABSTRACT OF MANPOWER PROJECTION MODEL PROJECT - PHASE I

The Manpower Projection Model (MPM) Project Phase I was a cooperative effort between the Ventura County Superintendent of Schools Office and the Ventura County Community College District.

The Project was designed to identify and develop a short-term manpower projection system for the Ventura County Standard Metropolitan Statistical Area (SMSA) and its adjacent labor-market areas.

Phase I of the Project concentrated on developing a projection model system linked to the U.S. Bureau of Labor Statistics (BLS) National Industry-Occupational (I-O) Matrix. This national Industry-Occupational (I-O) Matrix has produced manpower projections for 1975 and 1980. They are the basis for national projections made by the U.S. Department of Labor (DOL) in its many publications. These projections are also used for the data found in the very valuable Occupational Outlook Handbook. Linking the local Manpower Projection Model (MPM) system to the national matrix makes possible for the national industry and occupational trends to be superimposed on a local Standard Metropolitan Statistical Area (SMSA). This process makes it possible to relate directly the job market shifts to the local area.

The most important achievement of the Phase I Project was the development of the "Early Warning" Industry-Occupational (I-O) Matrix. This matrix is called "Early Warning" because it provides a systematic overview and an opportunity for an early look at the current and projected changes in the local labor market. This matrix was developed for Ventura County by using local data supplied by the State Department of Human Resources Development (HRD) in conjunction with the U.S. Bureau of Labor Statistics (BLS). The local data was combined with national matrix occupational coefficients (or ratios) used in the 1975 Matrix to produce the "Early Warning" preview tool.

The present "Early Warning" Matrix includes data for eight industrial divisions and 160 basic occupations. However, because of the assumption that national ratios for any given occupation apply to a local Standard Metropolitan Statistical Area (SMSA), the "Early Warning" Matrix does not necessarily possess adequate accuracy for it to be considered much more than a first look or "Early Warning" preview of possible changes in the labor market. This Matrix is the first of several analytical tools that the total Manpower Projection Model (MPM) system eventually will be able to provide occupational planners and practitioners.

The Industry/Occupational (I-O) Matrix is one of several projection techniques utilized in Phase I. Two additional projection techniques were used in an attempt to revise and localize the initial projections provided by the Industry-Occupational (I-O) techniques. They were the employer validation process and the extrapolation technique. The employer validation process component included the collection of employer forecast data. The extrapolation projections made use of local occupational and industrial trend data. In Phase I, employer validation surveys were conducted in the areas of Public and Human Service and the Aviation subcluster of Air Transportation.

On May 24-25 the Manpower Projection Model (MPM) system was shared with Vocational Education Practitioners during a workshop held for the purpose of correlating the data generated by the Manpower Projection Model (MPM) system to the Job Market Analysis Function required for each district plan for Vocational Education. The workshop participants were presented a user's kit which contained pertinent information outlining the components of the Manpower Projection Model (MPM) system. The kit contained the project goals, objectives, and described the techniques involved and identified possible uses of the Manpower Projection Model (MPM) system.

To facilitate research, review and analysis of the manpower projection literature, an Occupational/Resource Center was developed. The Manpower collection established provided the literature necessary for use in projecting the occupational needs for Ventura County. The Resource Center also provided literature for research into the general subject of employment.

The total or "Best" Manpower Projection Model (MPM) system concept was developed jointly by the Department of Human Resources Development (HRD) staff, Claremont Graduate School staff and the local project staff. This concept was the basis for the Phase I development of the Industry/Occupational (I-O) Matrix component.

The prototype now available is the first step in developing a continuing manpower projection system that can be used in any Standard Metropolitan Statistical Area (SMSA) in California. Phase I and the methodology developed has received the support of the Department of Human Resources Development (HRD) and the Department of Labor (DOL) as being compatible with their efforts to provide occupational demand and supply projections to local Vocational Education Practitioners.

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NEED FOR MANPOWER PROJECTIONS

This decade is a time of rapidly changing job-market conditions. This condition not only requires a constant process of reviewing, revising and updating of all the occupational education activities but also requires a manpower projecting tool that can provide local job-market data.

The Vocational Education Amendments of 1968 (Public Law 90-576) has placed increased emphasis upon program planning and evaluation, which has resulted in California Vocational Educators identifying twelve basic functions essential to public school vocational programs. These Functions must be taken into consideration when following the instructions for writing District Plans. Dr. Robert Barnes, former Director of the Research Coordinating Unit prepared some conceptual definitions for each of the twelve basic functions. Function #2 pertains to job market analysis and is defined as the "identification of manpower shortages, surpluses, projected job openings etc. that can be legitimately related to the district training responsibility."

Appendix C of Part I of the California State Plan for Vocational Education 1971 mandates cooperative action on the part of the state's schools and the Department of Human Resources Development to determine occupational education needs. The Agreement Between the Departments of Education and Human Resources Development with Respect to the Implementation of Public Law 90-576 Reads as follows:

Background and Purpose

The Vocational Education Amendments of 1968 (P.L. 90-576) has as its main purpose the development of vocational education training and retraining for persons of all ages and all communities. An essential requisite of such training and retraining is that, to be effective, it must have gainful employment as its actual objective.

P.L. 90-576 specifically provides for the financing of studies and projections of manpower needs on a national, regional, state, and local level to permit effective gearing of training and retraining to an objective of gainful employment. To further assist in meeting this objective of gainful employment, P.L. 90-576 calls for increased cooperation between the Employment Service and Vocational

Education officials. It is the intent of this agreement to implement the specific purposes of P.L. 90-576.

I. Labor Market and Occupational Information

Occupational information is needed as part of the content of general education of all students, beginning in the elementary schools. This permits learning values, attitudes, and general knowledge of the world of work, appropriate to the age of the learner, and helps build a foundation for later vocational exploration and preparation. Occupational information is also needed to serve as a basis for the selection and development of vocational training programs and courses in secondary schools. Finally, occupational information is needed in the guidance and counseling program for use in both group guidance and individual counseling, and in the school library.

A. Joint Responsibilities

It shall be the joint responsibility of the California Department of Education, Vocational Education Section (hereinafter referred to as Vocational Education), and the Human Resources Development Department (hereinafter referred to as the Employment Service), to:

1. *Encourage local districts and areas to formulate plans for meeting vocational education needs, particularly for those areas which are economically depressed areas or with high rates of unemployment and/or student dropouts.*
2. *Identify the needs for labor market and occupational information essential for program plans for vocational guidance and education in the state.*

Because of the increased emphasis placed on planning and evaluation by the Vocational Education Act (VEA) amendments, a critical need has influenced the development of a realistic systems approach for resolving these needs in the form of a manpower projection tool that can provide job-market data that is:

1. local
2. current
3. projected two to five years in the future
4. reliable and consistent

5. available and updated on at least an annual basis

6. convenient to use and easily understood by local Vocational Education Practitioners

The typical public school district has always reacted after the fact to changes in the job market. This condition is due to the lack of specific up-to-date local labor-market information, the importance of which has been matched only by its inadequacy. Most decisions regarding occupational education have been based upon incomplete information.

Up to the present time, employer forecasts have provided the best information that was available to local Vocational Education Practitioners and manpower agencies; however, employer forecasts are not precise because of constant changes in business conditions, government and union contracts, consumer preference, and technological changes.

It is obvious that if developing a manpower projection was easily done, the Department of Human Resources Development (HRD), Department of Labor (DOL) and other manpower agencies would have provided these types of data long ago. However, the state of the art in manpower projections is under constant scrutiny and investigation, and in recent years, because of census data research and the use of computers, the U.S. Bureau of Labor Statistics (BLS) Industry/Occupational (I-O) Matrix program has been developed and implemented. The Manpower Projection Model (MPM) Project took the next step in manpower projections by linking national and local data into an "Early Warning" projection tool.

The "Early Warning" Industry/Occupational (I-O) matrices developed by the Project have provided the necessary technique for vocational planning and evaluation through their design and capabilities which will provide:

1. required information on demand occupations

2. data base for determining kinds and volume of training necessary

3. national occupational trends

4. regional occupational trends

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5. information on local Standard Metropolitan Statistical Area (SMSA)

6. information on adjacent Standard Metropolitan Statistical Area (SMSA)

County secondary vocational practitioners, as well as Community College personnel, have responded to the demands placed on the planning and evaluation emphasis by developing a close working relationship within the guidelines of preparing District Plans. Their anxious participation to utilize the Manpower Projection Model (MPM) tool, designed to assist them in the fulfillment of the State Plan Mandates, has been indicated by the following:

The Office of the Superintendent of Schools, Ventura, has prepared in accordance with the California State Plan for Vocational Education Vocational Education Act of 1968 (P.L. 90-576) A Plan for Vocational Education 1971-72 in which Function #2 - Job Market Analysis, Part b. Planned Activities, Section (3) states:

> *A study of the Manpower Projection Model is intended to act as an early warning system for vocational educators in identifying the training needs of business and industry. This manpower projection study is funded under Part C of VEA 68 Act. The county office intends to submit a follow-up proposal to initiate the second phase of the study which will expand the use of the projection model to a broad variety of employment fields and conditions in Ventura County.*

The Ventura County Community College District in their Occupational Education Plan 1971-72, prepared in accordance with the California State Plan for Vocational Education Vocational Education Act of 1968 (P.L. 90-576), states their intention to comply with the demands of the Vocational Education Act Mandates and cooperate with the Ventura County Superintendent of Schools in the following manner:

1. *Population Needs Analysis*

   This function is primarily concerned with establishing and maintaining an information file which describes the population being served .....

   b. *Planned Activities*

      3) Development with Ventura County Superintendent of Schools, a localized manpower projection model (MPM).

2. *Job Market Analysis*

The Job Market Analysis function, is the counterpart of the population needs function, and is concerned with the demand side of the labor supply curve. The function is concerned with maintaining a file of information on existing and new or emerging occupations which fall within occupational categories served by vocational education, and have current or excess demands.

a. How is the need for the function being met?

5) Participation in the Ventura County Superintendent of Schools vocational education survey and manpower projection model project.

b. Planned Activities

4) Attempt to identify new employers and occupations through improved manpower projection techniques, i.e., use of the industry occupational matrix analysis .....

In addition to the county vocational practitioners, the Ventura Manpower Area Planning Council (MAPC), a new planning system designed in 1971, is now engaged in the inventory and evaluation of existing manpower programs. Although this organization is not yet in a position to recommend major changes in manpower programs, it has set about making some preliminary recommendations to the county government about strengthening the operation of the various manpower programs. This organization has expressed a desire to support the Ventura County Superintendent of Schools Manpower Projection Model (MPM) Project in conjunction with the Department of Human Resources Development (HRD) in its continued development.

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STEPS LEADING TO THE DEVELOPMENT OF A MANPOWER PROJECTION MODEL SYSTEM

STEP ONE - FAMILIARIZATION WITH NATIONAL PUBLICATIONS AND NATIONAL BLS METHODOLOGY

SUGGESTED SOURCES	SPECIFIC PUBLICATIONS
A. Department of Labor	A. Department of Labor Publications 1. Bureau of Labor Statistics (BLS) a. Tomorrow's Manpower Needs - Volume IV (1) National Methodology and Assumptions (2) Occupational Structure b. Occupational Outlook Handbook 2. Manpower Administration (MA) a. Dictionary of Occupational Titles (DOT)
B. Office of the President	B. Office of the President Publications 1. Bureau of the Budget a. Standard Industrial Classification Manual 1967 (SIC) (1) Industry Structure
C. Additional Sources	C. Bibliography of Additional Selected Publications

A. Department of Labor Publications

1. Bureau of Labor Statistics (BLS)

a. Tomorrow's Manpower Needs - Volume IV

A series of four volumes devoted to the subject of national, state and area projections of Manpower requirements. Volume IV has been of special assistance in this project as a source of the National Industry/Occupational (I-O) Matrix and other manpower data.

(1) National Methodology and Assumptions

This volume has provided a step-by-step resume of the components required to establish the Bureau of Labor Statistics (BLS) National Industry/Occupational (I-O) Matrix based upon assumptions at the national level. This detailed information used for national projections is the source of national methodology (see Appendix A) upon which the local "Early Warning" Industry/Occupational (I-O) Matrix has been developed.

(2) Occupational Structure

The occupational structure (Appendix B) is established by Bureau of Labor Statistics (BLS) after adaption and conversion of Bureau of Census data into their own usable format. This structure provides for 160 occupations which represent one axis of the various matrices set forth in Tomorrow's Manpower Needs - Volume IV. To understand better the similarity of occupational titles this volume provides a table of comparability of occupational composition of industry employment with Census Occupational Categories (Appendix C).

b. Occupational Outlook Handbook

This publication is a reliable reference which provides a comprehensive overview of occupational requirements and opportunities and is organized in such a manner that it can be utilized by both individuals and groups. It is designed to help counselors and students and provides information on counseling, placement and other services available to job seekers at local offices of State Employment services affiliated with U.S. Training and Employment Service in the Manpower Administration. It reports on different fields of work and provides information on occupational trends in various

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industries; analyzes job prospects; serves as a valuable tool in career planning and education counseling; and gives an overview of the world of work in terms of major occupational categories. Because of the frequent revisions, users of this publication are assured that occupational and career information is current and relevant. Another feature of the Handbook is that covered occupations are coded according to the occupational classification system developed by U.S. Department of Labor (DOL) and published in the Dictionary of Occupational Titles (DOT)

2. Manpower Administration (MA)

   a. Dictionary of Occupational Titles (DOT)

      This publication is a two volume edition in which each occupation is incorporated into an occupational classification structure that reflects the kind and level of work performed. It is a standard reference for occupational practitioners. State employment services use Dictionary of Occupational Titles (DOT) codes to classify job openings reported by employers, and prepare statistical reports. Department of Human Resources Development (HRD) job titles, and job titles used in the occupational education counselor's local Vital Information for Education and Work (VIEW) deck, are also based on the Dictionary of Occupational Titles (DOT) classification code.

B. Office of the President Publications

   1. Bureau of the Budget

      a. Standard Industrial Classification (SIC) (Appendix D)

         The Standard Industrial Classification was developed for the use in the classification of establishments by type of activity in which

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engaged; for purposes of facilitating the collection, tabulation, presentation, and analysis of data relating to establishments; and for promoting uniformity and comparability in the presentation of statistical data collected by various agencies of the United States Government, State agencies, trade associations, and private research organizations.

(1) Industry Structure

The Standard Industrial Classification (SIC) code establishes an industry structure (Appendix E). With some modification to conform to the Bureau of the Census data format of industrial classifications, it can be coupled with the Bureau of Labor Statistics (BLS) Dictionary of Occupational Titles (DOT) occupational structure and becomes the other axis of the National Industry/Occupational (I-O) Matrices. Although the Bureau of Labor Statistics' (BLS) industry-occupational matrices divide total U.S. employment into 160 occupations cross-classified into 116 industries, Manpower Projection Model (MPM) local projections in the "Early Warning" system for Phase I reduce the number of industries to eight industry division headings, excluding Agriculture and Non-Classified establishments.

C. Bibliography of Additional Selected Publications

For additional sources of valuable manpower projection material and related literature, reference may be made to the project bibliography.

SUGGESTED SUPPORT	ACCOMPLISHED CONTRACTS
A. Establish Lines of Communication with:	A. Solicitated Support
1. Manpower Agencies Programs	1. Meetings with Ventura County Manpower Area Planning Council
2. Local Vocational Practitioners	2. Meetings with Ventura County Vocational Coordinators
3. Liaison Committees	3. Manpower Projection Model Advisory Committee

1. Meetings with Ventura County Manpower Area Planning Council (MAPC)

Members of the Manpower Projection Model (MPM) staff have participated in the meetings held by the Ventura County Manpower Area Planning Council (MAPC) for the purpose of reviewing and updating progress of the Manpower Projection Model (MPM) system. The Ventura County Manpower Area Planning Council (MAPC) has shown an active interest in the Manpower Projection Model (MPM) Project as the data generated by the "Early Warning" Industry/Occupational (I-O) Matrix component will have the capacity to supply manpower agencies with information necessary to their training programs and job development programs.

2. Meetings with Ventura County Vocational Coordinators

Programs and presentations for furthering interest in the Manpower Projection Model (MPM) system and giving updated status reports were included in the meetings of the Ventura County Vocational Coordinators on November 16, 1971, December 14, 1971, March 21, 1972, and September 6, 1972. At the September 6 meeting, a thorough step-by-step walk-through of the "Early Warning" system was conducted and explained in detail, pointing out areas that indicate occupational growth and/or decline which should be considered by vocational planners and vocational guidance counselors.

3. Manpower Projection Model Advisory Committee

This committee was composed of county vocational practitioners and meets, among other reasons, for the purpose of keeping abreast of the developments and identified usages of the Manpower Projection Model (MPM) system. Members of the committee, representing various educational entities are listed below:

Dr. John Collins
Assistant Superintendent
Ventura County Community
College District

Mr. Charles C. Dahl
Associate Dean of Instruction
Ventura College

Mr. Chester Howe
Director of Extended Services
Simi Valley Unified School District

Mr. Darrel E. McMahan
Vice Principal
Santa Paula Union High School District

Mr. John Milroy
Assistant Principal
Nordhoff High School

Mr. Glen Phillips
Director of Educational Services
Fillmore Unified School District

Mr. Denis Smith
Director of Vocational Education
Oxnard Union High School District

Dr. John Stead
Coordinator of Vocational Education
Ventura Unified School District

Other resource people were:

Mr. Gene Dick, Manager
State of California
Department of Human Resources Development

Mrs. Roberta Koenig, Executive Secretary
Ventura County Manpower Area Planning Council

SUGGESTED ARRANGEMENTS	ACCOMPLISHED ARRANGEMENTS
A. Budget Arrangements	A. Budget Outline
B. Facility Arrangements	B. Role of Prime Contractor
C. Contract With Agencies Who Would Provide Services	C. Role of Contracting Agency Department of Human Resources Development (HRD)

The Manpower Projection Model (MPM) Project No. 56-10561-C007-71 was funded from a federal grant under the Vocational Education Amendments of 1968, P.L. 90-576, Part C, Section 131 (b). Grants are administered by the California State Department of Education. Part C grants are designed specifically for research and research training projects in the field of vocational education. All research and training projects funded must be directly related to improving the quality of, or extending the opportunity for, vocational/technical education available to youth and adults.

A. Budget Outline

The budget outline that follows indicates the various budget categories utilized for this project.

1. Personnel Services

Project Director
Associate Director
Project Coordinator
Project Administrator Assistant

2. Other Services

Research Consultants
Occupational Specialist
Student Field Research Assistants

3. Travel and Per Diem

Air Transportation
Out-of-City Ground Transportation
Local Mileage
Per Diem

4. Project Facilities

Office Space
Office Equipment
Telephone
Office Supplies
Duplicating

5. Other Direct Cost

Advisory Committee Meeting
In-Service Workshops

B. Role of Prime Contractor

Ventura County Office of the Superintendent of Schools was the prime contractor of the Manpower Projection Model (MPM) Project. The prime contractor assumed the responsibilities and duties indicated by the following:

1. provide physical location for Manpower Projection Model (MPM) Project
2. edit and reproduce user's kit
3. sponsor workshop
4. provide library support
5. implement system
6. evaluate system

C. Role of Contracting Agency - Department of Human Resources Development (HRD)

The responsibilities and duties of the Department of Human Resources Development (HRD) as listed below, were essential to the Manpower Projection Model (MPM) Project.

1. provide local employment data base
2. arrange for formatting and production of "Early Warning" Matrix
3. make occupational/industry employment projections

SUGGESTED SERVICES	SERVICES PROVIDED
A. Department of Human Resources Development (HRD) to Provide Local Employment Data Base and Other Assistance	A. Arrangements and Contracts
B. Arrange for Industry-Occupational (I-O) Matrix to be Produced	B. Data "Restacked"
C. Occupational/Industrial Employment Projections	C. Local Projections
D. Localized Industry/Occupational (I-O) Matrix	D. "Early Warning" Walk-Through

A. Arrangements and Contracts

The Department of Human Resources Development (HRD) was subcontracted by the Ventura County Superintendent of Schools to provide the following services:

1. Identify, collect and collate appropriate Human Resources Development (HRD) data for use in the Manpower Projection Model (MPM).
2. Advise the project staff in the preparation of manpower projections.
3. Assist the project staff in developing "User's Kits" utilized by the participants of the 1972 workshops.
4. Assist, where feasible, in the preparation of appropriate Human Resources Development (HRD) data.

The original source of local employment data, which the Department of Human Resources Development (HRD) provided, was the quarterly series of unemployment insurance tax reports submitted by all employers covered by the California Unemployment Insurance Code. In compiling and processing these reports, they are aggregated by Standard Industrial Classification (SIC) code to show the number of persons on the payroll in a given industry, as of mid-month, for each month in a given quarter. Using these data as bench marks, and applying link-relatives derived from a monthly sample of employing units, employment by industrial activity is estimated for each month for all Standard Metropolitan Statistical Areas (SMSA) in the state.

B. Data "Restacked"

As noted above, the Bureau of Labor Statistics (BLS) National Industry/Occupational (I-O) Matrix follows the Census Bureau industrial categories, while local employment data provided by the Department of Human Resources Development (HRD) are based on the Standard Industrial Classification Code (SIC). For the Manpower Projection Model (MPM) project purposes, the major differences were found in the distribution of government employment by activity performed, and industrial groupings by Standard Industrial Classification (SIC) code into single Bureau of Labor Statistics (BLS) industrial categories. In order that data used in the Manpower Projection Model (MPM) "Early Warning" Matrix be compatible with the Bureau of Labor Statistics (BLS) National Industry/Occupational (I-O) Matrix format, local employment totals provided by the Department of Human Resources Development (HRD) had to be disaggregated and redistributed, e.g., school employment was removed from state and local government and added to the educational services group in the Services Division.

Many man-hours were required by the Department of Human Resources Development (HRD), consultants, and local staff to "restack" the Department of Human Resources Development (HRD) data to the census industrial categories used by the Bureau of Labor Statistics (BLS).

C. Local Projections

The fundamental assumptions of the localized Manpower Projection Model (MPM) "Early Warning" Industry/Occupational (I-O) Matrix is that national occupational distributions within industries tend to have comparable local occupational distributions in the same industries, and that these distributions tend to be relatively stable over time. Given these assumptions, it is possible to compute occupational coefficients (or percentage distributions) for an industry from census data and other information, and project local occupational trends for the industry and anticipated movements within the industry. In this general way, local Industry/Occupational (I-O) projections were developed, within the Bureau of Labor Statistics (BLS) National Industry/Occupational (I-O) format, using a local monthly employment series from the Department of Human Resources Development (HRD) for the years 1965 through 1970 as the primary data base.

The actual methodology used in developing the national matrix is involved and sophisticated. A copy of the official description of the Bureau of Labor Statistics (BLS) methodology and assumptions used in its national matrix can be found in Appendix A.

D. "Early-Warning" Walk-Through

Tables A - C (Appendix F) are the localized "Early Warning" Industry/Occupational (I-O) Matrices for Ventura County. Each matrix is actually a fairly simple chart with one axis for industry specification and the other for occupational detail. In effect, each matrix shows the occupational structure of industries by whatever level of detail is available or wanted and the sources of occupational concentration across the industrial classifications.

Table A Summary reproduced here, is an example.

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Table A
Summary Industry-Occupation Matrix 1971
Employment Totals

VENTURA COUNTY

OCCUPATIONAL CATEGORY	TOTAL	Division No. 01	Division No. 02	Division No. 03	Division No. 04	Division No. 05	Division No. 06	Division No. 07	Division No. 08
[illegible]	72,492	1,677	4,404	14,[illegible]	4,040	21,394	3,348	15,23[illegible]	28,165
[illegible]	18,042	283	317	2,31[illegible]	266	301	239	4,56[illegible]	9,554
[illegible]	10,213	100	497	83[illegible]	320	4,242	1,024	1,111	2,019
[illegible]	44,383	122	246	1,909	965	3,417	2,567	2,595	9,486
Sales	5,613	9	16	47[illegible]	47	4,480	405	141	35
[illegible]	10,72[illegible]	410	2,156	2,52[illegible]	866	1,864	31	1,033	1,633
[illegible]	11,046	659	329	5,30[illegible]	1,093	2,814	13	390	728
[illegible]	12,770	22	23	234	120	3,657	104	4,713	3,695
[illegible]	3,032	0	609	43[illegible]	360	813	5	184	630

Sheet 1 of 1

The Industry Division form the vertical columns of the matrix, beginning with total employment for all industries, then by Industry Division from Mining through and including Government. Vertical column figures indicate the industrial employment by Occupational Category for each Industry Division. The horizontal rows of the matrix indicate the occupational employment totals within each Industry Division. They are formed by Occupational Categories starting with the occupational total for all occupations, then by Occupational Category from Professional and Technical through Laborers.

In Table A summary, the grand total figure of 92,472 (Row 1 - Column 1) is the 1971 total employment of Ventura County. The occupational structure of the grand total figure can be checked by moving down column 1 and observing the cells as they correspond to each Occupational Category. The grand total figure can also be obtained by moving across row 1 and observing each Industry/Occupational (I-O) cell as it corresponds to the Industry Division. Each Industry/Occupational (I-O) cell in row 1 or column 1 will then show total employment for each Occupational Category or Industry Division.

Further information can now be obtained from Table A summary for an Industry Division or Occupational Category of interest. The Mining Industry Division (column 2) and the Professional and Technical Occupational Category (row 2) may be used as an Industry Division example. The Industry/Occupational (I-O) cell formed by row 1 - column 2 indicates total industry employment of 1677 for Ventura County's Mining Industry. Row 2 - column 2 indicates a sub total of 189 Professional and Technical workers within the Ventura County's Mining Industry. The complete occupational structure is obtained by observing each Industry/Occupational (I-O) cell in column 2. The occupational category example, row 2 - column 1, shows 18,042 Professional and Technical occupations to be found in all Industry Division. The figure is made up by the intersection of Row 2 with each Industry Division column, which is the employment distribution of this occupational category by industrial divisions.

The figures shown are based on the assumption that local occupational structure is comparable to national occupational structure within like industrial activities. Each intersection of row and column is an Industry/Occupational (I-O) cell. The figures in each cell indicate the current (Tables A - A-3) 1971 and projected (Tables B - C-1) 1971-1975 number of persons for each specified occupation within the industry component. (For a walk-through of Tables A-1 - C-1 see Appendix F)

SUGGESTED RESPONSIBILITIES	RESPONSIBILITIES PERFORMED
A. Select Project Staff	A. Manpower Projection Staff Descriptions 1. Director 2. Analyst 3. Researcher 4. Clerical
B. Arranges with Consultants for Responsibilities	B. Roles of Consultants
C. Develop Manpower Projection Model System	C. "Best" Model/Phase I 1. "Best" Model a. goals b. objectives 2. Phase I a. goals b. objectives/results
D. Conduct Employer Validation Surveys	D. Employer Validation Process
E. Review and Analyze Manpower Planning and Development Publications	E. Manpower/Occupational Resource Center
F. Training Programs	F. Spring Workshop
G. Information Dissemination	G. Vehicles of Dissemination 1. Journal Articles 2. Newsletter 3. Presentations to Local Agencies and Organizations

A. Manpower Projection Model (MPM) Staff Job Description

1. Directors

The co-directors of the Manpower Projection Model (MPM) Project Phase I performed portions of the project both jointly and individually as outlined below:

Individually

1. Design a Manpower Projection Model (MPM) which will utilize three to five different projection techniques.

2. Provide technical assistance in the development and field testing of the model.

3. Design and develop an operational manual which details step-by-step procedures for the implementation of the model.

4. Design the Evaluation System for Manpower Projection Model (MPM).

5. Design the workshop for Vocational Education practitioners in the use of the Manpower Projection Model (MPM).

6. Assist in the design and development of the Manpower Resources Center.

7. Provide liaison between college personnel and project.

8. Principal contact with Bureau of Labor Statistics (BLS).

9. Write contracts for special consultants.

10. Provide liaison between secondary school personnel and project.

11. Principal contact with State Department of Education.

2. Analyst

The duties of the Project analyst are to assist the co-Directors and perform the following:

1. Research, review, analyze and abstract all manpower projection literature.

2. Work with the Project Librarian in cataloging appropriate references based on the survey of the manpower literature.

3. Provide administrative support to the four project consultants in their assignments.

4. Provide immediate supervision to student helpers involved in office and field activities.

5. Develop and validate project survey instruments.

6. Collate, summarize, analyze and abstract survey data.

7. Conduct in-person interviews and telephone interviews in collecting selected economic data.

8. Prepare interim progress reports on the project.

9. Maintain all project records.

10. Coordinate the development of audio-visual presentation materials including charts, graphs, and tables.

3. Researcher

The Project Researcher under the supervision of the Project Analyst performed the following:

1. Researched data in the area of manpower projections.

2. Research county, state and federal records to obtain pertinent information to be used in conjunction with the Industry/Occupational (I-O) Matrix.

3. Assist the consultants during in-service training workshops.

4. Assist in preparing reports on procedures, results, conclusions and recommendations.

4. Clerical

The clerical help assigned to the Project performed a variety of tasks including the following:

1. Types corresponsdence and other materials.

2. Received and relayed telephone messages.

3. Tabulated, prepared and duplicated reports.

4. Recorded minutes of Manpower Projection Model (MPM) meetings.

B. Roles of Consultants

The consultants for the Manpower Projection Model (MPM) Project provided valuable advice, recommendations, and assistance in the development of the total project. These contributions (as listed) were made in group conferences, telephone conference calls, and by individual effort.

1. Reviewed and analyzed the Manpower Projection Model (MPM) Project techniques to be used for specific occupational projections.

2. Recommended the appropriate sources of data required to perform the projections.

3. Provided in-depth review and analysis of each projection as it was completed.

4. Assisted in the development of the occupational projection manual.

5. Provided advice on special problems concerning the projection model, upon request of the project staff.

6. Assisted in the development of the spring workshop for occupational practitioners.

7. Assisted in the development of collection procedures for selected economic data.

8. Assisted in development of audio-visual economic data presentation materials including charts, graphs and tables.

C. "Best" Model/Phase I

1. "Best" Model

a. Goals

Phase I of the Manpower Projection Model (MPM) Project is the first part of the planned total Manpower Projection Model (MPM) system that was jointly developed by Miss Odessa Dubinsky, Manpower Analyst, Southern California Department of Human Resources; Dr. Paul Sultan, Professor of Economics, Claremont Graduate School; and Dr. William Lawson, Assistant to the Superintendent, Ventura County Community College District. The total or "Best" Manpower Projection Model (MPM) system is technically feasible within the current state of the projection art. However, the cost for initiating and maintaining the model system is expensive and may not be economically feasible at this time by any one agency. Nevertheless, it is the goal of any manpower projection model activity at the local area to attempt to reach the objectives provided in the "Best" model.

b. Objectives

1. To make local labor market area manpower projection for approximately 150 or more occupations, three to five years in advance with feasible accuracy.

2. To include in the local projections the major components of the local occupational structure and job demand engendered by such a structure within the area of interest; the direction and magnitude of such changes both in occupational structure and worker demand; the net expansion and replacement demand; the technological changes within the industries which may have an effect on occupational structure and job content; the shift in age and sex differences; significant changes in the wage rate; consumer preference shifts; and changes in the operational constraints due to legislation and its administrative enforcement.

3. To move freely, and with accuracy from one to another among the major occupational classification systems, e.g., Dictionary of Occupational Titles (DOT) to Bureau of Labor Statistics (BLS) to Census to the United States Office of Education (USOE) and vice versa.

4. To develop a system where all Federal, State and local government data sources may be used in the Manpower Projection Model (MPM).

5. To develop an inexpensive and time saving computerized model for maintaining and updating the local projection on an annual basis.

6. To develop a system where the actual and potential supply of workers are an integral part of the projection which shall include also a priority listing of the occupational characteristics in terms of salary, organizational level, advancement, permanency, skill level, etc.

7. To develop a system where high school, Regional Occupational Program (ROP), and college students interests and potential and anticipated skill levels can be matched with the projection.

8. To make projections by occupational clusters as well as special occupations in such a way that career ladders and lattices are easily identified.

9. To provide the output of the projection model in a format that will serve as a guidance tool for local teachers, counselors and parents and as a planning tool for administrators, board members, manpower agencies, local and state government.

10. To secure, in running the model, the active cooperation, coordination, and articulation with all public and private manpower agencies operating within the local labor market area.

c. Components

Economic Data Base/Indicators

1. Personal Income
2. Building Permits
3. Taxable Retail Sales
4. Gasoline Tax
5. Time and Demand Deposits

6. Population Changes
7. Motor Vehicle Registration
8. Assessed Valuation
9. Number of employers by size and Standard Industrial Classification (SIC)
10. Wage of Unemployment Insurance (UI)
11. Time series of employment by Standard Industrial Classification (SIC)

Industry/Occupational (I-O) Matrix (Phase I)

1. National Matrix Tie-in (Phase I)
2. Localizing Process for the Matrix (Phase I)
3. Occupational Classification Cross Referencing Process (Phase I)

Employer Validation Process

1. Current Employment by Industry and Occupation (Phase I)
2. Technological Changes
3. Age/Sex Shifts
4. Labor Turnover/Layoff
5. Seniority/Union Patterns
6. Labor Force Participation Rates
7. Wage/Fringe Benefits Shifts
8. Consumer Preference Shifts
9. Sales/Investment Changes
10. Occupational Classification/Position Description Verification
11. Standard Industrial Classification (SIC) Classification Verification (Phase I)

Demographic Characteristics at 10% Sample Level

1. Age Distribution
2. Sex Distribution
3. Income Level
4. Educational Level
5. Ethnic Background
6. Poverty Status
7. Geographic Concentration
8. Student Enrollment K-14 grades
9. Registered Voters
10. Labor Force Status

Supply/Training Inventory Process

1. Public Schools
2. Private Schools
3. Private Employers
4. Federal, State, Local Government Training Programs
5. Net Immigration
6. Department of Human Resources Development (HRD)/ Unemployment Insurance Program
7. Private Employment Offices

Projection Process

1. Localized Industry/Occupational (I-O) Matrix (Phase I)
2. Extrapolation-trending (Phase I)
3. Employer Validation Survey (Phase I)
4. Econometric Model-Linear/Curvelinear
5. Professional/Associations/Chamber of Commerce Forecasts

Information Distribution Process

1. Manpower Occupational Resource Center (Phase I)
2. Computer Print-outs
3. Newsletter/Reports/Brochures/Articles/Speakers/Posters (Phase I)
   a. Guidance Counselors
   b. Teachers
   c. Administrators
   d. Manpower Agencies
   e. Students
   f. Parents
   g. Newspapers/Radio/TV
   h. Employers
   i. General Public

In-Service Training for Users

1. Workshops/Institutions (Phase I)
2. Individual Sessions for Users

Maintenance of Manpower Projection Model (MPM) Components

1. Early Warning Systems
2. Data Collecting Systems-Field Surveys/Mailings/Other
3. Updating System-Data Processing/Hand

Operations

1. Space/Equipment
2. Computer Use-Programming/Time
3. Staffing-Coordination/Maintenance/Analysis
4. Communications/Printing
5. Supplies/Materials
6. Travel/Per Diem

2. Phase I

a. Goals

Phase I of the Manpower Projection Model (MPM) Project was the beginning development of the total or "Best" local manpower projection system. Its goals were:

1. Linking the National Bureau of Labor Statistics (BLS) Industry/Occupational (I-O) Matrix to the Ventura County Standard Metropolitan Statistical Area (SMSA).

2. Refining the localized-matrix projections through an employer involvement and other projections.

3. Establishing a Manpower/Occupation Resource Center for use by the Project staff and by local occupational practitioners.

4. In-service training for acquainting others in the state with the projection model and its use in their local area.

b. Objectives/Results

To accomplish the goals of Phase I the following specific objectives and results were:

1. Development of a manual for using the pilot Manpower Projection Model (MPM).

   Result: User's Kit which was distributed to the participants of the Spring workshop (Appendix G).

2. Development of an "Early Warning" component in the model for identifying critical occupational cluster shortages.

   Result: "Early-Warning" matrices detailing current 1971, projected change 71-75, and projected total industrial/occupational employment (Appendix F).

3. Research and implementation of the primary manpower projection techniques of:

   a. Extrapolation

   Result: The extrapolation technique remains an unresolved component of Phase I.

   b. Employer Surveys

   Result: Two Employer Validation Surveys were conducted and the data collected have been reviewed and analyzed to determine the efficiency of this methodology and its potential value in implementing and validating the matrix data (for a more detailed account see page 34).

   c. Industry/Occupational (I-O) Matrix

   Result: The Industry/Occupational (I-O) Matrix (Appendix F) produced in Phase I and termed "Early Warning" has proved to be a valuable asset in manpower projection needs analysis.

4. Offering of a Spring 1972 In-Service Workshop

   Result: On May 24-25, 1972, the Spring Workshop was held to inform and train vocational practitioners in the use of the Manpower Projection Model (MPM).

5. Development of a Manpower/Occupational Resource Center

   Result: Ventura County's Resource Center, located at the deactivated Oxnard Air Force Base, has processed over 2,000 publications for use in research, reviewing, analyzing, and projecting occupational needs for Ventura and other counties.

D. Employer Validation Process

The employer-forecast survey is the traditional method of making local projections, and this technique has been used primarily by state employment services.

It has been tried also as one technique in Phase I of the Manpower Projection Model (MPM) System. Experimental surveys were made in the Standard Metropolitan Statistical Area (SMSA) and adjacent labor-market area. Employers were chosen randomly and asked to provide information using the following basic economic assumptions:

1. Continued economic growth in the survey area.
2. Continued scientific and technological advances.
3. Planned expansion and modernization by establishments.
4. Availability of qualified workers to meet their needs.
5. Continuation of the present-day work-week.

Employers in the experimental sample were asked to identify:

1. Type of service/business in which they were engaged.
2. Total number of full-time and part-time paid employees for years 1970-1975.
3. Method of computing salary/wage.
4. Sources of employment.
5. Specific job titles.
6. Education level required for the specific jobs.
7. Number of full-time employees for years 1970-1975 for each specific job title.
8. Starting salary for each job title.

The first employer survey was designed for a mail response. The majority of the questionnaires were sent to government agencies and the remainder to nonprofit and private organizations. After the initial survey request was mailed, a follow-up letter, including a duplicate survey, was sent to those employers who did not respond to the original

request. As many of the returned surveys were not completed sufficiently to tabulate, telephone follow-ups were made to provide information needed.

It was found that employers were sometimes reluctant to furnish the information because:

1. They are uncertain of future conditions and feel unable to make accurate long-term forecasts.
2. Some did not want to take the time to fill out the questionnaire.
3. In the case of many federal organizations, the forecasts could not be determined because of pending and/or cancelled contracts.

As a whole, the employers who did complete the questionnaire were able to provide actual employment figures for past and present years by occupation.

Of the 407 employers included in the first survey sample, Public and Human Service (Appendix H) 65% completed and returned usable questionnaires.

The second employer survey covered Air Transportation Occupations (Appendix H) followed a similar format with two exceptions: (1) specific air transportation services and repair industry groups were selected and (2) all of the job classifications included in Air Transportation and services, according to the Dictionary of Occupational Titles (DOT), were listed along with their designated Dictionary of Occupational Titles (DOT) code numbers for ease of identification by employers. A total of 493 of these surveys were mailed out with a 40% return.

The data collected have been reviewed and analyzed to determine the efficiency of this methodology and its potential value in implementing and validating the matrix data.

E. Manpower/Occupational Resource Center

The purpose for developing and maintaining the Manpower/Occupational Resource Center is to make available various collections for all Ventura County occupational education programs and future research into the general subject of employment. The Manpower collection will provide

literature for use in research, reviewing, analyzing and projecting occupational needs for Ventura and other counties.

The Center has processed over 2,000 publications, including special project HELP (125 books plus a large number of pamphlets), over 1,000 government publications and over 1,000 miscellaneous publications. All of the publications listed on the bibliography can be found in the Center.

The system of cataloging and retrieval has been derived from numerous libraries in Ventura, Santa Barbara, Los Angeles, and Orange counties. A composite system has been developed by "borrowing" the most outstanding features of each system that would apply to our particular needs. A total of sixteen (16) libraries were investigated.

Thus far, two computer print-outs (Appendix I) have been produced, one for Project HELP and one for the government documents. The print-outs can be distributed to the various school districts and/or any organization which has an interest in the substance of the Center. With the data process method, the print-outs can be updated regularly and/or items deleted as necessary, keeping the list current at all times. The print-outs can be filed easily in appropriate binders. In addition to the print-outs, the method of using ditto masters has been added, which is more economical when needed in quantity.

F. Spring Workshop

On May 24-25, 1972, the Spring Workshop for the Manpower Projection Model (MPM) was held. The goals of the workshop were established:

1. To inform the participants of the background, concepts and components of a localized Manpower Projection Model (MPM).
2. To explain the need for the workshop and for the manpower projections.
3. To apply the model to participant's own needs in preparing the VEA District Plan and other manpower planning activities.
4. To improve articulation, cooperation, and coordination between all levels of education and the Department of Human Resources Development (HRD) in a given Standard Metropolitan Statistical Area (SMSA) and/or local labor-market area.

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The workshop began with the background and highlights of the Manpower Projection Model (MPM) system explained by the project's co-director Mr. John Van Zant, Director of Occupational Education, Ventura County Superintendent of Schools Office.

The guest speaker was Richard Dempsey, Coordinator, Tomorrow's Manpower Needs Studies, Bureau of Labor Statistics, Washington, D.C. He presented a technical review of the components involved in the assumptions and methodology of the National Industrial Occupational Matrix to which the Manpower Projection Model (MPM) "Early Warning" matrices are tied.

Three-dimensional graphs were demonstrated by Dr. Paul Sultan, Professor of Economics, Claremont Graduate School, in his discussion of Industrial/Occupational changes and job-market analysis.

The "Early Warning" matrices and their local data input were demonstrated and explained by Miss Odessa Dubinsky, Manpower Analyst, Department of Human Resources Development (HRD). A general question and answer period concerning Manpower Projection Model (MPM) System concluded the workshop.

Each workshop participant was asked to complete an evaluation of the workshop on a scale of a baseball score card, i.e., struck out, single, double, triple, home run. The Spring batting average was good, no one struck out, 3% had singles, 25% had doubles, 34% had triples, and 38% had home runs. Some of the comments were; "Good job," "Over my head but helpful," "Excellent material - hope we will be able to put information to good use."

G. Vehicles of Dissemination

1. Journal Articles

The Manpower Projection Model (MPM) made its national debut in the September issue of the American Vocational Journal. The article co-authored by Manpower Projection Model (MPM) project directors, Mr. John L. Van Zant and Dr. William Lawson, explained the need for more detailed local manpower projections and how the Manpower

Projection Model (MPM) System has fulfilled that need. The complete text of the article can be seen in Appendix J.

The second article, "Ventura County's Early Warning Matrices for Manpower Projection" identifying the Manpower Projection Model (MPM) System and its application was authored by Project Consultant, Miss Odessa Dubinsky. This article has been presented to the Bureau of Labor Statistics (BLS) for publication in their Occupational Outlook Quarterly (Appendix J).

2. Newsletter

Moorpark College, a member of the Ventura County Community College District, publishes an informative economic newsletter for its local labor market area. The Manpower Projection Model (MPM) employer validation survey on public and human services was the basis for a newsletter article. The article, "Career Opportunities in Public Services" was authored by project co-director Dr. William Lawson and Project Analyst Mrs. Florine Matthews. (Appendix J)

3. Presentations to local organizations

The Manpower Projection Model (MPM) System has been presented for review and implementation at official county meetings, i.e., Ventura County Vocational Coordinators, Ventura County Regional Occupational Program Administrative Advisory Committee, and Ventura County Manpower Area Planning Council.

STEP SIX - INCORPORATE MANPOWER PROJECTION MODEL INFORMATION INTO LOCAL PLANNING

SUGGESTED USERS	METHODS OF USE
A. Local Planners 1. Administrators 2. Counselors 3. State Employment Agency 4. Manpower Agencies/Programs	A. Current Uses 1. Occupational Education Administrators 2. Occupational Education Counselors 3. Local Office: California Department of Human Resources Development (HRD) 4. Ventura County Manpower Area Planning Council (MAPC)

Current Uses

The local "Early Warning" Matrices of Phase I have projected possible employment requirements for eight industrial divisions and 160 occupations for Ventura County. The matrices are in three sections, one indicating current 1971 Occupational/Industrial employment in both actual figures and percentages, another for estimating new change in Occupational/Industrial employment between 1971-1975, and one for estimating total employment in 1975.

These data, combined with supplementary information from local sources, provide a system that can be used for: guidance counseling, curriculum-development, an in-service training vehicle and development of area planning. It also provides for built-in flexibility that permits ease of maintenance and updating coupled with ease of transportability of the Manpower Projection Model (MPM) System to any Standard Metropolitan Statistical Area (SMSA) in the state.

The following is an outline of specific ways practitioners may plan to use the "Early Warning" Industry/Occupational (I-O) Matrices.

A. Occupational Education Administrators

1. Comprehensive view of occupational employment in the Standard Metropolitan Statistical Area (SMSA) and its adjacent labor market.

2. Basis for analyzing the occupational needs for existing and new occupational curriculums.

B. Occupational Educational Counselors

1. Projection data can be incorporated into the Vital Information for Education and Work (VIEW) system as well as identifying those Vital Information for Education and Work (VIEW) cards that should be given priority for localization.

2. Comprehensive overview of labor market for students in the process of planning careers because it can provide:

   a. Information on projected National Industry/Occupational trends

   b. Information on regional occupational trends

   c. Information on local Standard Metropolitan Statistical Area (SMSA) trends

   d. Information on adjacent labor markets

   e. Information by "Occupational Category," e.g., Professional, Technical, and Kindred

   f. Comprehensive information on eight industries/160 occupations

C. Local Office: California Department of Human Resources Development (HRD)

1. Plan job development and employer-relations programs.

2. Provide required information on demand occupations to all interested manpower agencies.

3. Help fulfill requirements for occupational projections under state and federal mandates.

4. Assist job-seekers in determining best potential for job-search efforts.

D. Ventura County Manpower Area Planning Council (MAPC)

1. Provide data for the comprehensive Manpower Plan.
2. Provide data base for determining the number of training slots required.
3. Indicate priorities for training funds use.
4. Indicate priority areas for extensive job development.

It is important that the limitations of the Phase I "Early Warning" matrices and its data sources be understood by potential users. The proposed Phase II development will help overcome and/or correct some of these limitations:

1. The original source of local employment data is the unemployment insurance tax reports submitted quarterly by all employers covered by the California Unemployment Insurance Code. These reports show the number of persons on the payroll as of mid-month. Using these data as benchmark and applying link-relatives derived from a monthly sample of employing units, employment by industrial activity is estimated for each month for all Standard Metropolitan Statistical Area's (SMSA) in the state. The estimates are prepared by the Employment Data and Research Section of the Department of Human Resources Development (HRD) under contract with the Bureau of Labor Statistics (BLS). The estimates are of wage and salary employment and present a count of jobs by place of work. In this sense they differ from the decennial census data and from the estimates shown in the Monthly Report of the number of persons with jobs by residence of worker. It is necessary to understand and reconcile these differences in order to apply the Bureau of Labor Statistics (BLS) matrix methodology to local data.

2. The industrial classifications used are different; the local estimates are based on the industrial categories as shown in the Standard Industrial Classification (SIC) Codes, while the Bureau of Labor Statistics (BLS) matrix follows the census categories. The major differences are found in the distribution of government employment by activity to the census categories in order to construct the matrices.

3. The matrix methodology as used in Phase I assumed the compatibility of local occupational structure with the national patterns. In order to validate and correct the local matrix coefficients, it will be necessary to obtain and apply as yet unpublished data from the 1970 census.

4. In Phase I no attempt was made to include self-employed and unpaid family workers or agricultural workers.

5. Occupational data in the census (and the Bureau of Labor Statistics (BLS) matrix) are largely based on self-assessment of jobs held. Employer titles are not necessarily comparable. Therefore the census data must be analyzed and interpreted to employer job categories so that actual worker demands and trends can be determined.

Although Phase I provided its improvement in the quantity and quality of the occupational employment data, additional model refinements are necessary to extend the model's use and provide practitioners and local manpower agencies with a systematic and simplified method for understanding and planning effective manpower programs in the coming years.

Phase II will accomplish these goals by meeting the following objectives:

1. To field test the "Early Warning" Industry/Occupational (I-O) Matrix in three to five Standard Metropolitan Statistical Areas (SMSA) in Southern California to determine its practicability and compatibility under their local conditions.
2. To incorporate the 1970 census occupational data for the local Standard Metropolitan Statistical Area (SMSA) into the already developed Industry/Occupational (I-O) computer program.
3. To determine the best system and format for reporting data generated by the Industry/Occupational (I-O) matrix system for use in planning and developing training programs.
4. To utilize the Bureau of Labor Statistics'(BLS) Occupational Employment Survey (OES) when feasible to maintain and update the matrix.
5. To update, revise and produce a user's kit or manual that can be utilized with a minimum of in-service training by local occupational practitioners.
6. To train a minimum of 10 local educational practitioners per participating Standard Metropolitan Statistical Area (SMSA) in the use of the Manpower Projection Model (MPM) projection system.

7. To project occupatonal trends in 1980 and 1985 using the National Bureau of Labor Statistics'(BLS) Industry/Occupational (I-O) Matrix methodology.

8. To develop and implement a localized system for validating the Industry/Occupational (I-O) Matrix based on local-employer surveys for selected industrial components.

9. To determine cost for implementing and maintaining the Manpower Projection Model (MPM) System.

10. To develop the research methodology in cooperation with the Department of Finance and/or Internal Revenue Service for obtaining and compiling and analyzing workers' commuting patterns among areas to help determine training needs. Data used would include place of work and place of residence.

11. To use the Manpower Projection Model (MPM) System as a vehicle for further strengthening the process of area Standard Metropolitan Statistical Area (SMSA) vocational education planning, regional planning among secondary education, higher education, government manpower agencies, private employers, and Manpower Area Planning Councils (MAPC).

This evaluation of the Manpower Projection Model (MPM) system development, Phase I, and related reporting procedures is organized under four general headings: (1) a review of this final report on Phase I operations; (2) comments on the adequacy of this report as a step-by-step guide for area practitioners in the implementation of the Manpower Projection Model (MPM) system; (3) a brief critique of the Manpower Projection Model (MPM) Phase I, structures and operations; and (4) recommendations for methodological refinements.

1. Final Report, Manpower Projection Model System, Phase I

As a final report on the Manpower Projection Model (MPM), Phase I operations, this document appears to be reasonably concise, consistent, and complete. The Phase I contractural obligations with VEA, assumed jointly by the Ventura County Superintendent of Schools and the Ventura County Community College District have, in the main, been well served.

The abstract at the beginning of this report provides an adequate overview of general Phase I goals and achievements without being burdened with technical detail. The main body of the report is well organized, and presents a sequential view of the major technical details of Phase I operations in a straightforward manner. The Appendix F presentation of Phase I's major output -- the localized Industry/Occupational (I-O) "Early Warning" matrices -- together with the "walk-through" outlined in Step Four-D of the report, is particularly well taken. This feature of the report should facilitate absorption of the major Manpower Projection Model (MPM) Phase I output by those otherwise unfamiliar with Industry/Occupational (I-O) matrix methodology.

The development of the Manpower/Occupational Resource Center at Oxnard, covered in Step Five-E of the report, is an important ancillary gain from Phase I operations, now and for the future. One of the major obstacles usually encountered by those interested in local manpower policy planning

and occupational needs projection is the early identification of adequate information sources and bibliography. The establishment and maintenance of a facility of this nature should prove to be an invaluable asset to local practitioners and technicians in the manpower/occupational field.

The Spring Workshop, covered in Step Five-F of the report is another important fallout from the Manpower Projection Model (MPM) System project, Phase I. The value of this exercise is double-edged: (a) It provides a useful vehicle for "spreading the word" among practitioners about technical efforts to improve their tools for manpower planning and (b) it gives the authors and designers of the Manpower Projection Model (MPM) System a test-tube view of the effective thrust of the overall project. The "user's kit" notebook given to workshop participants, while somewhat overlong on volume, provides a reference work in digestible form which is rich in technical detail. It should prove to be a valuable information-source book for anyone interested in manpower/occupational operations.

2. Step-by-Step Guide for Implementation of Manpower Projection Model (MPM) System in Any Standard Metropolitan Statistical Area (SMSA)

This report should serve very well as a modified "user's kit" for those who may be interested in replicating the Ventura County Manpower Projection Model (MPM) System applications elsewhere.

The six-step operational organization of the main body of the report is an ingenious outline device for this secondary objective of this Phase I final report. The side-by-side sign post presentation of "suggested" operations and parallel "suggested" sources of support for those operations, in the light of Manpower Projection Model (MPM) Phase I experience, appears to be a well-marked and useful road map to the Industry/Occupational (I-O) "Early Warning" matrix territory. The

follow-on discussions under each step, cross-referenced to appropriate appendices, provide sufficient background information and/or technical detail for project development, with methodological hazards and administrative detours clearly marked.

3. Manpower Projection Model (MPM), Phase I, Structures and Operations

The primary assumptions and conceptual research design of the Manpower Projection Model (MPM) System, Phase I, are basically sound. The Industry/Occupational (I-O) Matrix localization procedures, given the Department of Human Resources Development (HRD) five-year data base of local labor-market demand, provide a working tool for local manpower planning and occupational-needs projection which should prove to be better than anything else heretofore available.

Validation and refinement of output from the Manpower Projection Model (MPM) system model by application of 1970 forth-count census data should result in obvious gains with respect to the validity of occupational coefficients. However, there are some other, more subtle, methodological and structural difficulties in the "Early Warning" concept which should receive careful thought and attention in Phase II. These difficulties involve: (a) trend-line extrapolation of occupational projections; (b) the employer validation survey, (c) the commuting pattern inpact on the labor supply available in local areas; and (d) the potential local labor-supply impact of vocational education and occupational counseling based on autonomous decisions by practitioners at various local institutions. The implications of this last item are discussed briefly here, and the first three are commented upon in the recommendations offered below.

Given the best occupational guidance and projection tools which the presently available research methodology can devise, the collective goal orientation of vocational education planners

and practitioners will, per force, be improved. However, if the majority of the local planners and practitioners respond, individually, in autonomous and uniform fashion to the guidance offered by occupational-needs projections designed on an area basis, the collective output of individuals oriented towards a particular occupation or occupational cluster may very well result in a structural glut of labor supply for the available jobs in those clusters, as time passes. Although this notion holds implications for master planning of vocational education on an area basis which are really outside the scope of the Manpower Projection Model (MPM) System design, these implications should be considered if the output of the Manpower Projection Model (MPM) System is to be used in the most effective manner.

4. Recommendations for Methodological Refinements

Trend-line extrapolation of occupational-needs projections: In its present state, forecasting in the economic arena really involves more art than science. The basic difficulty with trend-line projections is failure to predict or detect turning points until such turning points become obvious, after the fact. This inherent weakness of trend-line projections is reinforced in the context of the "Early Warning" feature of the Manpower Projection Model (MPM) Industry/Occupational (I-O) Matrix format, with projections being attempted for five, and ultimately ten years into the future. However, given the rich data base of past performance of local labor demand offered by the Department of Human Resources Development (HRD) employment series, distributed by occupational coefficients across the relevant occupational structures, there appears to be considerable room for the applications of artfully designed prediction models of the lagged-base moving, average variety.

The model building process involved here does not, of necessity, have to be as complex as the Bureau of Labor Statistics (BLS) projection methodology, but possible gains from data

manipulation in simple naive model format should be examined. Given computer assisted data manipulation capabilities presently available to the Manpower Projection Model (MPM) System, this examination should not prove to be an inordinately difficult task.

Recommendation: In view of improving the Manpower Projection Model (MPM) System occupational-needs forecasts, that various configurations of lagged-base moving, average, naive models be constructed for selected occupations on the occupational-demand data derived from the Department of Human Resources Development (HRD) employment series; and each configuration be tested in a back-casting sense until a model configuration that works reasonably well is uncovered. The accuracy of the forecasts should then be tested, short-term, as real-time increments of the series become available, with appropriate modification and refinement of the model in the light of its short-term performance.

The Employer Validation Survey: The employer validation process appears to be a valuable adjunct technique for adjusting the Manpower Projection Model (MPM) System output to truly local conditions. However, the questioning of any group of individuals about their intentions for future actions leaves much to be desired, if the purpose of the inquiry is to set up a basis for forecasting the outcome of their intended actions. Relatively recent developments in survey techniques use questionnaires which are designed to elicit the respondents assessment of the probability that he will undertake a given action in future, rather than the expression of a mere intention to do thus-and so.* It appears that adaptations of this survey technique might

*Questionnaires of this sort underlie the Census Bureau's forecast of "Consumer Buying Indications" published in Current Population Reports, Series P-65. The results of some interpretations of these census data are also found in Consumer Buying Prospects, published quarterly by the Commercial Credit Company, Baltimore, Md. A good general discussion of the methodology involved can be found in Ch. 3 of Forecasting Methods, by Chisolm & Whitaker (Richard D. Irwin, Inc., 1971).

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provide considerable improvement in the results of the Manpower Projection Model (MPM) System employer validation surveys. Two cautions are in order, however -- (a) most of us are hard put to guess what a professional or personal situation might hold for us tomorrow or next week, much less next year or five years hence. In this context, asking an employer to predict his occupational needs or employment patterns five or ten years into the future appears to be an exercise in futility; (b) given presently available statistical techniques, surveys of whole populations are relatively more expensive than surveys of a well designed random sample of appropriate size, without any relative gains in the accuracy of the results obtained.

Recommendation: That small sample pilot surveys of local employers probable occupational needs in future be constructed and tested for validity of results, with the assessment time-line improved on respondent employers restricted to not more than the next three years.

Commuting Patterns: The need to assess the labor-supply impact of worker-commuting patterns within the local area and across adjacent Standard Metropolitan Statistical Area (SMSA) boundaries is obvious, in view of the "Best Model" objectives of the Manpower Projection Model (MPM) System development. Access to IRS and/or Department of Finance data appears to involve bureaucratic barriers and interagency approvals of considerable complexity, as does the extraction of suitable data once such approval is obtained. Why not exploit local data sources which should be readily available, given that appropriate assurances of the anonymous character of the data desired is made to the agencies involved. Almost anyone who has ever held a job has applied for credit in his local community. It follows that the credit records held by banks, large retail establishments, and local credit bureaus hold records on a large segment of the employed population of any given community, showing place of residence, place of employment, occupational attachment, wages or salary earned, other income, number of dependents, number of other workers in the household, etc.,

ad infinitum. These data appear to be specifically tailored for a thoroughgoing assessment of the determinants of worker commuting patterns, and the impact of these travel-to-work patterns on local labor supply, and are probably available in much richer detail than more distant agencies could provide.

Recommendation: That a small pilot study be commissioned early in Manpower Projection Model (MPM) System development, Phase II, to test the feasibility of exploiting local credit-record data to define the determinants of worker-commuting patterns and the impact of these patterns on the Manpower Projection Model (MPM) "Best Model" System.

DATA SOURCES/AGENCIES

BLS - U.S. Department of Labor, Bureau of Labor Statistics

CENSUS - U.S. Department of Commerce, Bureau of the Census

CES - Current Employment Series - employment data compiled and prepared by Department of Human Resources Development (HRD) under contract to the Bureau of Labor Statistics (BLS), obtained from a representative sample of employing establishments on a regular monthly schedule and reflecting employment by place of work.

DOL - U.S. Department of Labor

DOT CODE - Dictionary of Occupational Titles - an occupational classification system first published in 1939 and revised and updated over the years. It makes available descriptive information concerning most jobs in the U.S. economy, and provides a numerical classification structure by means of which occupations are arranged according to their interrelationships. The standardization of job titles and accompanying definitions of job duties provide a unique tool for the many users of occupational information.

USES - U.S. Employment Service

HRD - State of California, Department of Human Resources Development

MPM - Manpower Projection Model - a project designed to identify and develop a short-term manpower projection model for the Ventura County Standard Metropolitan Statistical Area (SMSA) and its adjacent labor-market areas.

SIC - Standard Industrial Classification Manual - sets up an industrial classification system which may be identified by a four-digit number according to the type of activity in which they are engaged. The purpose is to facilitate the collection, tabulation, presentation and analysis of data relating to employing establishments. The system promotes uniformity and comparability in the presentation of statistical data

collected by various agencies of federal and state governments, trade associations and private research organizations.

USOE - U.S. Office of Education

VEA - Vocational Education Act

CONCEPTS/PROGRAMS

BLS NATIONAL INDUSTRY/OCCUPATIONAL (I-O) MATRIX - a technique designed and developed by the Bureau of Labor Statistics (BLS) combining census data, employer surveys and extrapolation techniques to "fill-in" the industry/occupation employment cells.

CAREER LADDER CONCEPT - indicates a vertical progression from an entry-level position to a journeyman-level position within the same specific occupational classification (normally in the same organization or union).

CAREER LATTICE CONCEPT - indicates a horizontally diagonal and/or vertical progression from an entry-level position normally within the occupational field or cluster (normally in the same organization) but not necessarily the same specific occupational classification.

CIVILIAN LABOR FORCE - consists of all persons 16 years of age or over who are either employed or unemployed. The term "civilian" indicates that all persons serving in armed forces are excluded.

"COEFFICIENT" MATRIX - the industry/occupational (I-O) ratios (or percentages) computed by relating employment by occupation or industry or vice-versa.

COMMUNITY PROFILE - demographic characteristics of the population of a community such as: age and sex distribution, income and educational level, ethnic background, poverty status, geographic concentration, student enrollment, registered voters, labor force status.

EMPLOYER VALIDATION - a technique used to obtain occupational information and estimates from a sample of area employers to be used in validating cells of the matrix and to assist in making localized forecasts of local-occupational and industrial trends.

ENTRY-LEVEL JOBS - those positions for which employers will accept and hire workers with little or no previous experience in the occupation and with relatively minimum training or education for the specific job.

ECONOMIC INDICATORS - the basic factors of a community, such as: employment, unemployment, hours worked, income, savings, volume of building permits, volume of sales, etc., whose fluctuations may be used to determine overall economic trends.

EXTRAPOLATION TECHNIQUE - projection techniques used to extend known economic time series data into a future-time period.

INDUSTRY - a distinct group of private, public and/or nonprofit productive enterprises engaged in producing goods or services.

I-O (INDUSTRY/OCCUPATIONAL) MATRIX - a "checkerboard" or tabular listing of data in industry-employment columns and occupational-employment rows and vice-versa. (See BLS MATRIX definition)

JOB FAMILIES - a group of jobs related on the basis of similar job or worker characteristics which are required for successful work performance. For example, experience, training and education skill, duties performed, tools, machines, and other aids and material used on the job. These jobs are associated with only a specific career education occupational cluster.

LABOR MARKET AREA- an identifiable area with a major industrialized city or cities, meeting a certain-size criterion, in which resident workers move to and from jobs.

LABOR FORCE (CIVILIAN) - the total number of persons within an identified area - community, county, state, nation who meet the criteria of being employed or unemployed. The employed are those gainfully engaged by an employer, or who are self-employed, or who are unpaid family workers. The unemployed are those who are actively engaged in seeking work and are able to work and are available for work.

LABOR FORCE PARTICIPATION RATE - the proportion of persons 16 years of age and over who are actively attached to the labor force.

LABOR "TURNOVER" - gross movement of workers into and out of the work force of an establishment.

LEAD TIME - in this context, the span of time between awareness of expected or continued job opportunities and completion of a training preparation for available jobs.

MANPOWER AGENCY - an organization concerned with providing services of training, guidance, placement, job development, counseling and other support activities to current and future members of the Civilian labor Force.

MANPOWER PROJECTIONS - a quantitative economic forecast of demand and supply of workers by industry and/or occupation.

MAPC - Manpower Area Planning Council (formerly known as the Cooperative Area Manpower Planning System - CAMPS) whose function is to plan, coordinate and serve as a cohesive area planning group for all local manpower programs.

MATRIX - (See I-O Matrix)

OCCUPATION - a group term used to define specific activities (or work assignments) needed to produce goods and/or services.

OCCUPATIONAL CLUSTER - denotes a category of occupations concerned with producing similar kinds of products or rendering similar services; for example: construction trades, clerical jobs, and machine operations jobs. Included are groups of occupations which are necessarily closely related with respect to similarity

in work performed, but the groups are composed generally of occupations which have commonality of skills, aptitudes, knowledges, traits, training, etc.

OCCUPATIONAL FIELD - comprised of occupations characterized by a similarity of one or more tasks, skills, training, and aptitudes required to perform them. The occupations may occur in various occupational groupings that are related to a career education occupational cluster on the basis of a similarity of broad work factors associated with a certain type of work.

OCCUPATIONAL STRUCTURE - the various levels of jobs (or activities) required to produce goods or services within industrial divisions. Occupations range from laborer to professional.

OPEN-ENTRY/OPEN-EXIT CONCEPT - indicates that every one at any age must have an opportunity to enter the job market at his level of competency and move ahead as far as he can or chooses. Exit must not be final and reentry should remain available.

PROJECTION - a quantitative economic forecast based on analysis and calculations using economic data. The word is commonly used to distinguish the conditional prediction from the unconditional prediction.

ROP - Regional Occupational Program - an occupational training program which meets the requirements and standards of instruction pursuant to the California Education Code. The training activity is conducted in a variety of physical facilities and not situated in a single location or site.

SMSA- Standard Metropolitan Statistical Area - a concept first developed by the U.S. Bureau of the Budget in 1943. The primary objective was to have all reporting federal agencies utilize the same geographic boundaries in publishing statistical data useful for analyzing labor-market problems. The criteria used for defining Standard Metropolitan Statistical Areas (SMSA) are essentially those used in defining major labor-market areas. As of July 1, 1970, there were 233 Standard Metropolitan Statistical Areas (SMSA) in the United States. The 16 in California coincide with the 16

major labor areas in the state.

SUB-CLUSTER - one of the components of an occupational cluster.

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APPENDIX A - Assumptions and Methods Used to Develop National Industry and Occupational Projections (National I-O Matrix Methodology)

APPENDIX B - Bureau of Labor Statistics (BLS) Occupational Classification Structure

APPENDIX C - Comparability of Occupational Titles in the Bureau of Labor Statistics (BLS) Tables of Occupational Composition of Industry Employment with Census Occupational Categories

APPENDIX D - The Standard Industrial Classification (SIC)

APPENDIX E - National Industry/Occupational (I-O) Matrix Industry Structure

APPENDIX F - "Early Warning" Matrices (Tables A-E)

APPENDIX G - User's Kit "Table of Contents" and "Table of Appendices"

APPENDIX H - Employer Validation Survey Forms

1. Public and Human Service
2. Air Transportation

APPENDIX I - Manpower/Occupational Resource Center Collection Printouts

1. Child Care and Development Collection (Project HELP)
2. Manpower Collection

APPENDIX J - Journal Articles, Newsletter

APPENDIX A

ASSUMPTIONS AND METHODS USED TO DEVELOP NATIONAL INDUSTRY AND OCCUPATIONAL PROJECTIONS (NATIONAL I-O MATRIX METHODOLOGY)

Assumptions and Methods Used to Develop National Industry and Occupational Projections* (National I - O Matrix Methodology)

This bulletin presents the latest national industry and occupational employment requirements projections for 1980 prepared by the BLS. The methods used to develop employment projections represent the efforts of several research staffs in the Bureau, including those working on occupational outlook, labor force studies economic growth, technological change, and productivity.

Assumptions

The Bureau's projections of manpower requirements are based on a series of assumptions about the economy. The larger the disparity between the assumed and actual conditions the more likely actual employment levels will vary from projected levels, although implications of these differences may be partially offsetting. For example, projections based on the assumption that defense expenditures are growing would have higher output and employment levels than those based on constant expenditures. Because staffing differs in defense and nondefense industries, occupational requirements also could differ.

One of the most important assumptions underlying manpower projections describes the labor force in the target year. The size, sex, and age composition of the labor force are expected to change by 1980 as indicated by the latest labor force projections prepared by the Bureau:[1] (1) The labor force, 100.7 million; (2) Armed Forces, 2.7 million; and (3) civilian labor force, 98.0 million.

The assumed size of the Armed Forces in 1980 (2.7 million) is generally consistent with peacetime conditions in the late 1950's and early 1960's. The validity of this assumption depends greatly upon developments in foreign affairs in the 1970's.

[1] The U.S. Labor Force to 1985, BLS, Special Labor Force Report 119.

*Tomorrow's Manpower Needs, Volume IV (Washington, D.C.: Superintendent of Documents, 1971), Bulletin 1737, pp. 3-6.

Another important assumption is full employment in the target year, 1980. Based on a 3-percent unemployment rate to represent full employment,[2] civilian employment in 1980 was computed as follows: (1) Civilian labor force, 98.0 million; (2) unemployment (3 percent) 2.9 million; and (3) civilian employment, 95.1 million.

Other major assumptions underlying the national manpower projections are: (1) The international climate will improve. The United States will no longer be fighting a war, but, on the other hand, a still guarded relationship between the major powers will permit no major reductions in armanents. This would still permit some reduction from the peak levels of defense expenditures during the Vietnam conflict (2) The institutional framework of the American economy will not change radically (3) Economic, social, technological, and scientific trends will continue, including values placed on work, education, income, and leisure (4) Fiscal and monetary policies will achieve a satisfactory balance between low unemployment rates and relative price stability without reducing the long-term economic growth rate (5) All levels of government will join efforts to meet a wide variety of domestic requirements, but Congress will channel more funds to State and local governments (6) Problems posed by air and water pollution and solid waste disposal may require an increasing amount of the Nation's productive resources, but will not dampen significantly our long-run rate of growth.

Projection Methods

Although a variety of techniques were used, two steps generally were followed in projecting the growth of occupations: (1) Total manpower requirements in each detailed industry; (2) trends in the proportion of each occupation in each detailed industry. These proportions (ratios) were then multiplied by projected 1980 total manpower requirements in the industry to derive an estimate of occupational requirements in each industry in 1980. Total requirements in each occupation then were obtained by summing across all industries. Employment requirements in some occupations were also projected independently of the occupation's relationship to particular industries. This technique was particularly useful for occupations that are affected by a limited number of variables and/or are located primarily in one industry or group of industries,

[2] Although projections in this volume are based on a 3-percent model, alternate projections based on a 4-percent unemployment rate are published in U.S. Economy in 1980 (BLS Bulletin in 1673, 1970).

such as teachers and automobile mechanics. When both techniques were used, differences in the results were analyzed and reconciled based on judgments of the analysts.

Projections of Detailed Industry Employment

The first step in developing projections of detailed industry employment was to estimate the level of economic activity (real GNP) in 1980.[3] If a 3-percent unemployment rate is to be achieved in 1980, real GNP must be high enough to provide employment for 97 percent of the civilian labor force or 95.1 million workers. Real GNP in 1980 is estimated by combining projections of total employment with projections of changes in hours and output per man-hour. Separate estimates are made for the government and private sectors of the economy.

Three methods of analysis were used to project detailed industry wage and salary employment requirements. Total employment is distributed by industry in several ways, depending on the data available, the level of industry detail required, and the characteristics of the industry.

One method is to translate the GNP and total employment into industry employment requirements through the use of input-output analysis.[4] Essentially, this technique requires that final demand (GNP divided into its components-investment, consumption, etc.) be allocated among major types of goods and services consumed. The demand is then traced back through the chain of production by using an input-output matrix to determine the output required from each industry supplying materials or services to produce the end product. For example, the final demand for automobile creates an intermediate demand for steel will then create a demand for iron, ore, coal, etc.

[3] The growth in real GNP between 1970 and 1980 will be an important determinant of employment growth in individual industries over the period, and was used as an independently variable in the regression analysis approach discussed below.

[4] In this system, industries were classified into about 80 sectors.

By computing total output requirements for each industry (the sum of final and intermediate demand) and average hours in the target year, and combining these data to expected output per man-hour in each industry, a projection of industry employment is obtained.[5] Four sets of projections based on different economic assumptions were developed for 1980 using this approach: (1) Service economy at 3 percent unemployment; (2) Service economy at a 4 percent unemployment; (3) Durable economy at 3 percent unemployment; (4) Durable economy at 4 percent unemployment. The projections in this report are consistent with a service economy at a 3 percent unemployment level.

Another procedure involved the use of regression analysis to estimate employment in each industry consistent with assumptions underlying the overall model. Equations were developed which related industry wage and salary employmemt in the 1947-69 period with different combinations of primary economic variables selected because they were considered strategic in determining long-run changes in aggregate employment. Detailed industry wage and salary employment projections derived from the combination of variables providing the best statistical tests were tentatively selected as final estimates.[6]

Industries were studied individually and factors expected to influence their future growth were examined. This approach was used especially for industries in which past trends in employment were not indicative of future trends and for which the model provided unacceptable results (poor statistical tests or unreasonable employment projections). In this approach, a variety of regression equations were developed and tested. For example, in the motor vehicle manufacturing industry, the variables which were tested in different combinations included personal disposable income, expenditures for producers' durable equipment, driving-age population, number of households, motor vehicle registrations and number of families who earn more than $10,000 annually.

5 This description of the input-output process has been simplified. Readers may obtain a copy of Patterns of U.S. Economic Growth (BLS Bulletin 1672, 1970), for a complete description of the input-output technique.

6 Productivity was handled implicitly in the model. The implicit assumption for each detailed industry projection was that the trend in productivity in the 1947-69 period would continue into the future. (The productivity assumption, and consequently employment, were modified for some industries based on information from the Bureau's Office of Productivity, Technology, and Growth.)

Where important, interindustry relationships were taken into account.[7] The equations for which the combination of variables provided the best statistical results were used to project employment in 1980. Results obtained from input-output analysis, individual industry studies, regression equations, and qualitative information concerning technology and the structure of the industry were used to determine employment projections for each industry. Before these projections were final, they were reviewed to make certain that (1) productivity expectations, real GNP and civilian labor force estimates for 1980 were in balance, and (2) projections were consistent with overall assumptions.

Projections of Occupational Requirements

Each industry requires a specific mix of occupations. The relative importance of particular occupations changes over time, however, in response to technological advancement and changes in scale of production, product mix, and organization of industries, among other factors. To reflect these circumstances, occupational patterns for each industry were developed for 1960, 1967, and 1970, and projected 1980[8] on the basis of occupational trends between 1950 through 1970.[9]

[7] For example, steel requirements depend on the output of industries such as automobiles, machinery, and fabricated metals. Therefore, an independent variable in the regression equation for an industry may be employment or production in other industries.

[8] For the national industry-occupational matrix 1970 and 1980, see appendices F and G.

[9] For a description of sources and characteristics of occupational statistics, see Occupational Employment Statistics, Sources and Data, BLS Report 305, U.S. Department of Labor, Bureau of Labor Statistics, 1966.

Data Sources for the National Industry-Occupational Matrix 1960 and 1970[10]

The Bureau's industry-occupational matrices are tables dividing total U.S. employment into 160 occupations cross-classified by 116 industries. The 1960 and 1970 matrices[11] rely heavily upon the 1960 U.S. Census Bureau's Occupation by Industry Report.[12] However, the 1960 matrix differs from the census report in two major ways: (1) The BLS matrix was made consistent with industry and occupational group employment estimates from the monthly household survey (CPS) so that data between decennial census years could be used; and (2) the BLS table uses employment data from a number of sources considered preferable to census data, including:

BLS surveys of employers for scientists and engineers by industry
Office of education for teachers and librarians
Regulatory agencies for interstate industries, include railroads, airlines, telephone and telegraph communications and pipelines
Professional societies, especially medical and health occupations
Industry and community wage surveys
Federal Civil Service Commission

The 1960 matrix was used as the base for the 1967-70 matrices.[13]

[10] For a more complete description of the industry-occupational matrix, see Occupational Employment Patterns for 1960 and 1975 (BLS Bulletin 1599)

[11] The 1970 industry-occupational matrix contained in this report is preliminary. A final 1970 matrix will be developed when 1970 decennial census data are available.

[12] U.S. Bureau of the Census, U.S. Census of Population: 1960. Subject Reports. Occupation by Industry, Final Report PC(2)-7C. U.S. Government Printing Office, Washington, D.C.

[13] For a more complete discussion of the methods used to develop the 1967 and 1970 matrices, see Occupational Employment Statistics 1960-67 (BLS Bulletin 1643).

Available data from other sources, such as those cited, were incorporated as fixed cells. For the remaining cells, first approximations of the occupational patterns for 1967 (1970) were made by interpolating between the patterns of the 1960 and 1975 matrices. The resulting patterns in mining and manufacturing were made consistent with data on production worker trends from the Bureau's Current Employment Surveys program. The patterns were then applied to individual industry employment controls and summed to occupational totals. (See appendix C). These occupational control totals were then compared with CPS and other sources of information. When necessary certain occupations were then forced (except fixed cells) on a prorated basis to predetermined occupational control levels. This iterative forcing was repeated until the internal matrix cells were consistent with both the industry and occupational controls. Thus, the national industry-occupational matrices were consistent with (a) national employment by industry, (b) broad occupational employment levels from the CPS, (c) trends in production (and nonproduction) worker employment by industry, (d) anticipated trends in occupations within industries for the 1980 matrix, and (e) detailed employment estimates from the CPS or other sources.

Projection of the National Industry-Occupational Matrix

The occupational structure of each industry was projected from historical statistics and other factors that might influence occupational structure, such as expected new technology and changes in products. (1) For most industries the projected changes in patterns estimated in earlier Bureau studies were applied to the 1967 matrix pattern. (2) For the remaining industries where heavy defense expenditures had not caused atypical trends during the 1965-67 period, 1980 pattern estimates were developed by extrapolating the 1960-67 matrix trends. These data, together with a variety of other statistics[14] covering varying spans of time between 1950[15] and 1970, were gathered and arranged to indicate employment trends by occupation for particular industries or the entire economy. Technological and other causes

[14] Data for recent years were available on employment by occupation from the noncensus sources of occupational data described above.

[15] Some adjustments to the published census statistics were made for greater comparability between 1950 and 1960 as the industry classification of 1960 differed from that of 1950.

of past changes in occupational structure were analyzed to determine whether they were likely to affect future occupational structures to a similar, greater, or less extent.

Unless bases were found for modification, the effects on industry employment and occupational composition of social and technological trends in the post-World War II period were assumed to persist to 1980.[16] Thus for many occupational ratios, particularly those of small size, the initial projections-a continuation of past trends in industry occupational composition-were accepted. On the other hand, projection of ratios of large size were often modified from past trends by analyzing underlying factors. As an increase or decrease in proportionate employment for one occupation in a particular industry requires offsetting changes in other occupations in the industry, few of the final occupational ratios that were as large as 1 percent were exact extensions of past trends.

The industry-occupational ratios for 1980 reflect the skills that each industry will require in 1980. In developing these ratios no specific consideration was given to the availability of workers with the required skills. Yet many of the industry-occupational ratios for 1980 (particularly those of small size) are extensions of the changes in ratios reported for the period 1947-70. These ratios, therefore, embody a continuation of unidentified past adjustments to shortages (or increasing relative costs) for some occupations. Moreover, the occupational ratios were developed in relation to particular levels of national industry employment--those given in appendix C to this volume. Employment estimates which differ appreciably from these may indicate a difference in scale of operations or production methods and therefore a difference in the occupational structure of the industry.

[16] Numerous and fragmented sources and varying time spans of industry-occupational data, and different occupational concepts highlight the importance of judgment based on familiarity with occupations and industries in projecting industry-occupational structures.

APPENDIX B

BLS OCCUPATIONAL CLASSIFICATION STRUCTURE

BLS OCCUPATIONAL CLASSIFICATION STRUCTURE*

Professional, technical, kindred
- Engineers, technical
  - Engineers, aeronautical
  - Engineers, chemical
  - Engineers, civil
  - Engineers, electrical
  - Engineers, industrial
  - Engineers, mechanical
  - Engineers, metallurgical, etc.
  - Engineers, mining
  - Other engineers, technical
- Natural Scientists
  - Chemists
  - Agricultural scientists
  - Biological scientists
  - Geologists, geophysicists
  - Mathematicians
  - Physicists
  - Other natural scientists
- Technicians, except medical, dental
  - Draftsmen
  - Surveyors
  - Air traffic controllers
  - Radio Operators
  - Technicians, other
- Medical, other health workers
  - Dentists
  - Dietitians, nutritionists
  - Nurses, professional
  - Optometrists
  - Osteopaths
  - Pharmacists
  - Physicians & surgeons
  - Psychologists
  - Technicians, medical, dental
  - Veterinarians
  - Other medical, health workers
- Teachers
  - Teachers, elementary
  - Teachers, secondary
  - Teachers, college
  - Teachers, other

*Tomorrow's Manpower Needs, Volume IV, (Washington, D. C. : Superintendent of Documents, 1971), Bulletin 1737, pp. 27 - 29

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Social scientists
- Economists
- Statisticians & actuaries
- Other social scientists

Other professional, technical & kindred
- Accountants & auditors
- Airplane pilots, navigators
- Architects
- Workers in arts, entertainment
- Clergymen
- Designers, except design draft
- Editors & reporters
- Lawyers & judges
- Librarians
- Personnel & labor relations workers
- Photographers
- Social & welfare workers
- Professional, technical, kindred, n.e.c.

Managers, officials, proprietors
- Conductors, railroad
- Creditmen
- Officers, pilots, engineers ship
- Postmasters & assistants
- Purchasing agents
- Managers, office, proprietors, n.e.c.

Clerical & kindred workers
- Stenos, typists, secretaries
- Office machine operators
- Other clerical, kindred workers
  - Accounting clerks
  - Bookkeepers, hand
  - Bank tellers
  - Cashiers
  - Mail carriers
  - Postal clerks
  - Shipping, receiving clerks
  - Telephone operators
  - Clerical & kindred, n.e.c.

Sales Workers

Craftsmen, foremen & kindred
- Construction craftsmen
  - Carpenters
  - Brickmasons & tile setters
  - Cement, concrete finishers
  - Electricians
  - Excavating, grading machine operator
  - Painters & paperhangers
  - Plasters
  - Plumbers & pipefitters
  - Roofers & slaters
  - Structural metalworkers

Foremen n.e.c.

Metalworking crafts except mechanics
- Machinists & related occupations
- Blacksmiths, forgemen, hammersmen
- Boilermakers
- Heat treaters, annealers
- Millwrights
- Molders, metal except coremakers
- Patternmakers, metal, wood
- Rollers & roll hands
- Sheet metal workers
- Toolmakers & diemakers

Printing trades craftsmen
- Compositors, typesetters
- Electrotypers, stereotypes
- Engravers, except photoengravers
- Photoengravers, lithographers
- Pressmen, plate printers

Transportation & public utility craftsmen
- Linemen & servicemen
- Locomotive engineers
- Locomotive firemen

Mechanics & repairmen
- Airplane mechanics & repairmen
- Motor vehicle mechanics
- Office machine mechanics
- Radio & t.v. mechanics
- Other mechanics & repair

Other craftsmen & kindred
- Bakers
- Cabinetmakers
- Crane, derrick, hoist men
- Glaziers
- Jewelers & watchmakers
- Loom fixers
- Opticians, lens grinders
- Inspectors, log & lumber
- Inspectors, other
- Upholsterers
- Craftsmen & kindred n.e.c.

Operatives & kindred workers

Drivers & deliverymen
- Drivers, bus, truck, tractor
- Deliverymen & routemen

Transportation & public utility operators
- Brakemen & switchmen, Railroad
- Power station operators
- Sailors & deckhands

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Semiskilled metal working occupations
- Furnacemen, smeltermen, pourers
- Heaters, metal
- Welders & flame cutters
- Assemblers, metalworkers, class A
- Assemblers, metalworkers, class B
- Inspectors, metalworkers, class B
- Machine tool operators, class B
- Electroplaters
- Electroplaters, helper

Semiskilled textile occupations
- Knitters, loopers, toppers
- Spinners, textile
- Weavers, textile
- Sewers & stitchers, manufacturing

Other operatives & kindred
- Abestos, insulation workers
- Attendants auto service parking
- Blasters & powdermen
- Laundry, dry cleaning operator
- Meat cutters, except meat packing
- Mine operative laborers, n.e.c.

Service Workers

Private household workers

Protective service workers
- Firemen
- Guards, watchmen, doorkeepers
- Police, other law enforcement officers

Food service workers
- Bartenders
- Cooks, except private households
- Counter & fountain workers
- Waiters & waitresses

Other service workers
- Airline stewards, stewardesses
- Attendants, hosp., other inst.
- Charwomen & cleaners
- Janitors & sextons
- Nurses, practical
- Service workers, n.e.c.

Laborers, except farm & mine

Farmers and farm workers

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APPENDIX C

COMPARABILITY OF OCCUPATIONAL TITLES IN BLS TABLES OF OCCUPATIONAL COMPOSITION OF INDUSTRY EMPLOYMENT WITH CENSUS OCCUPATIONAL CATEGORIES

Comparability of occupational titles in BLS tables of occupational composition of industry employment with Census occupational categories*

Occupational titles in BLS tables	Comparable census occupational categories
PROFESSIONAL, TECHNICAL AND KINDRED	Same
Engineers, aeronautical	same
Engineers, chemical	same
Engineers, civil	same
Engineers, electrical	same
Engineers, industrial	same
Engineers, mechanical	same
Engineers, metallurgical, etc.	same
Engineers, mining	same
Other engineers, technical	Sales engineers, plus engineers, not elsewhere classified
Chemists	Same
Agricultural scientists	Agricultural scientists, plus part of foresters and conservationists
Biological scientists	same
Geologists and geophysicists	same
Mathematicians	same
Physicists	same
Other natural scientists	same
Draftsmen	same
Surveyors	same
Air traffic controllers)	Radio operator
Radio operators)	
Technicians, other	Technicians, electrical and electronic, technicians, other engineering, and physical science; and technicians, other

*Tomorrow's Manpower Needs - Volume IV (Washington, D.C.: Superintendent of Documents, 1971), Bulletin 1737, pp. 22-25.

Comparability of occupational titles in BLS tables of occupational compositions of industry employment with Census occupational categories--Continued

Occupational titles in BLS tables	Comparable census occupational categories
Dentist	Same
Dietitians and nutritionists	same
Nurses, professional	same
Optometrists	same
Ostepaths	same
Pharmacists	same
Physicians and surgeons	same
Psychologists	same
Technicians, medical and dental	same
Veterinarians	same
Other medical, health workers	Chiropractors; therapists, nurses, student professional
Teachers, elementary	Same
Teachers, secondary	same
Teachers, college	Part of college presidents, professors, and instructors not elsewhere classified
Teachers, other	Same
Economists	same
Statisticians and actuaries	same
Other social scientists	Miscellaneous social scientists
Accountants and auditors	same
Airplane pilots and navigators	same
Architects	same
Workers in arts and entertainment	Includes actors, actresses, artists, and art teachers; athletes; authors; dancers and dance teachers; entertainers, not elsewhere classified muscians and music teachers and sports instructors and officials
Clergymen	Same
Designers, except design draftsmen	same
Editors and reporters	same
Lawyers and judges	same
Librarians	same

Comparability of occupational titles in BLS tables of occupational composition of industry employment with Census occupational categories--Continued

Occupational titles in BLS tables	Comparable census occupational categories
Personnel and labor relations workers	Same
Photographers	same
Social and welfare workers	same
Professional and technical workers, not elsewhere classified	Includes part of college teachers, farm and home management advisors; part of foresters and conservationists; funeral directors and embalmers; public relations and publicity writers; recreation and group workers; religious workers; and professional technical, and kindred, not elsewhere classified
MANAGERS, OFFICIALS, AND PROPRIETORS	Same
Conductors, railroad	same
Credit men	same
Officers, pilots, engineers, ship	Officers, pilots, pursers and engineers, ship
Postmasters and assistants	Same
Purchasing agents	Purchasing agents and buyers, not elsewhere classified
Managers, officials, and proprietors, not elsewhere	Includes buyers and department heads, store; buyers and shippers, farm products; floor men and floor managers, store; inspectors, public administration; managers and superintendents, building; officials and administrators, not elsewhere classified; public administration; officials, lodge, society, union, etc.; managers, officials, and proprietors, not elsewhere classified
CLERICAL AND KINDRED WORKERS	Same
Stenos, typists, and secretaries	Three separate titles
Office machine	same

Comparability of occupational titles in BLS tables of occupational composition of industry employment with Census occupational categories--Continued

Occupational titles in BLS tables	Comparable census occupational categories
Accounting clerks	Part of bookkeepers
Bookkeepers, hand	Part of bookkeepers
Bank tellers	same
Cashiers	same
Mail carriers	same
Postal clerks	same
Shipping and receiving Clerks	same
Telephone operators	same
Clerical and kindred workers, not elsewhere classified	Includes agents, not elsewhere classified; attendants and assistants, library; attendants and physicians and dental office; baggagemen transportation; collectors, bill and account; dispatchers and starters, vehicles; express messengers and railway mail clerks; file clerks, insurance adjusters, examiners and investigators; messengers and office boys; payroll and timekeeping clerks; receptionists; stock clerks and storekeepers; telegraph messengers; telegraph operators; ticket, station, and express agents; and clerical and kindred, not elsewhere classified
SALES WORKERS	Same
CRAFTSMEN, FOREMEN, AND KINDRED WORKERS	same
Carpenters	same
Brickmasons and tile setters	same
Cement and concrete finishers	same
Electricians	same
Excavating, grading machinery operators	same

Comparability of occupational titles in BLS tables of occupational composition of industry employment with Census occupational categories--Continued

Occupational titles in BLS tables	Comparable census occupational categories
Painters and paperhangers	Painters, construction and maintenance and paperhangers (two titles)
Plasterers	Same
Plumbers and pipefitters	same
Roofers and slaters	same
Structural metalworkers	same
Foremen, not elsewhere classified	same
Machinists and related occupations	Machinists and job setters, metal (two titles)
Blacksmiths, forge, hammermen	Blacksmiths and forgemen and hammermen (two titles)
Boilermakers	Same
Heat treaters, annealers	same
Millwrights	same
Molders, metal (excluding oremakers)	same
Patternmakers, metal and wood	same
Rollers and roll hands	same
Sheet metal workers	Tinsmiths, coppersmiths, and sheet metal workers
Toolmakers and diemakers	Toolmakers and diemakers and setters
Compositors and typesetters	Same
Electrotypers and stereotypers	same
Engravers, except photoengravers	same
Photoengravers and lithogravers	same
Pressmen and plate printers	same
Linemen and servicemen	same
Locomotive engineers	same
CRAFTSMEN, FOREMEN AND KINDRED WORKERS--continued	
Locomotive firemen	same
Airplane mechanics and repairmen	same
Motor vehicle mechanics	same
Office machine mechanics	

Comparability of occupational titles in BLS tables of occupational composition of industry employment with Census occupational categories--Continued

Occupational titles in BLS tables	Comparable census occupational categories
Radio and TV mechanics	same
Railroad and car shop mechanics	same
Other mechanics and repairmen	Air conditioning, heating, and refrigeration mechanics, and repairmen and mechanics and repairmen, not elsewhere classified
Bakers	Same
Cabinetmakers	same
Cranemen, derrikmen, hoistmen	same
Glaziers	same
Jewelers and watchmakers	same
Loom fixers	same
Opticians, lens grinders	same
Inspectors, log and lumber	same
Inspectors, other	same
Upholsterers	same
Craftsmen and kindred workers, not elsewhere classified	Bookbinders; decorators and window dressers; furriers; millers, grain, flour, feed, etc.; motion picture projectionists; piano and organ tuners and repairmen; shoemakers and repairers, except factory; stationary engineers; stone cutters and stone carvers; and craftsmen and kindred workers, not elsewhere classified
OPERATIVES AND KINDRED WORKERS	
Drivers, bus, truck, tractor	Bus drivers and truck and tractor drivers (two titles)
Deliverymen and routemen	Deliverymen and routemen, and taxicab drivers and chauffeurs (two titles)
Brakemen and switchmen, railroad	Brakemen, railroad and switchmen (two titles)
Power station operators	Same
Sailors and deck hands	same
Furnacemen, smelterers, pourers	same
Heaters, metal	same
Welders and flame cutters	same

Comparability of occupational titles in BLS tables of occupational composition of industry employment with Census occupational categories--Continued

Occupational titles in BLS tables	Comparable census occupational categories
OPERATIVES AND KINDRED WORKERS--continued	
Assemblers, metalworking, class A	Part of assemblers
Assemblers, metalworking, class B	Part of assemblers
Inspectors, metalworking, class B	Part of checkers, examiners, and inspectors, manufacturers
Machine tool operators, class B	Part of operatives, not elsewhere classified
Electroplaters	Part of operatives, not elsewhere classified
Electroplaters helper	Part of operatives, not elsewhere classified
Knitters, loopers and toppers	Same
Spinners, textile	same
Weavers, textile	same
Sewers and stitchers, manufacturers	same
Asbestos, insulation workers	same
Attendants, auto service, parking	same
Blasters and powdermen	same
Laundry, dry cleaning operatives	same
Meat cutters, except meat packing	same
Mine operatives, laborers	same

Comparability of occupational titles in BLS tables of occupational composition industry employment with Census occupational categories--Continued

Occupational titles in BLS tables	Comparable census occupational categories
OPERATIVES AND KINDRED WORKERS--continued	
Other operatives and kindred workers, not elsewhere classified	Includes apprentices; part of assemblers; boatmen, canalmen, and lock keepers; chainmen, rodmen, and axmen, surveying; part of checkers, examiners, and inspectors, manufacturing; conductors, bus and street railway; dressmakers and seamstresses, except factory; dyers; filers grinders and polishers, metal; fruit, nut, and vegetable graders and packers, except factory; graders and sorters, manufacturing; milliners; motormen, mine, factory, logging camp, etc.; motormen street, subway, and elevated railway; oilers and greasers, except auto; packers and wrappers; not elsewhere classified; painters, except construction and maintenance; photographic process workers; sawyers; stationary firemen; and part of operatives and kindred workers, not elsewhere classified
SERVICE WORKERS	Same
Private household workers	same
Firemen	Firemen, fire protection
Guards, watchmen and doorkeepers	Guards, watchmen and doorkeepers and watchmen (crossing) and bridge tenders (two titles)
Policemen and other law enforcement officials	Marshals and constables; policemen and detectives; sheriffs and bailiffs
Bartenders	Same
Cooks, except private household	same
Counter and fountain workers	same
Waiters and waitresses	same
Airline stewards and stewardesses	Part of housekeepers and stewards, except private household
Attendants, hospital and other institutions	Same

Comparability of occupational titles in BLS tables

of occupational composition of industry employment

with Census occupational categories--Continued

Occupational titles in BLS tables	Comparable census occupational categories
SERVICE WORKERS--continued	
Charwomen and cleaners	Same
Janitors and sextons	same
Practical nurses	same
Other service workers, not elsewhere classified	Attendants, professional and personal services, not elsewhere classified; attendants, recreation and amusement; barbers; boarding and lodging housekeepers; bootblacks; chambermaids and maids, except private household; elevator operators; hair-dressers and cosmetologists; part of housekeepers and stewards, except private household; kitchen workers, not elsewhere classified, except private household; midwives; porters; ushers, recreation and amusement; and service workers, except private household, not elsewhere classified
LABORERS, EXCEPT FARM AND MINE	Same
FARMERS AND FARM WORKERS	Farmers and farm managers, and farm laborers and foremen

APPENDIX D

THE STANDARD INDUSTRIAL CLASSIFICATION

Introduction

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THE STANDARD INDUSTRIAL CLASSIFICATION*

Purpose of the Classification

The Standard Industrial Classification was developed for use in the classification of establishments by type of activity in which engaged; for purposes of facilitating the collection, tabulation, presentation, and analysis of data relating to establishments; and for promoting uniformity and comparability in the presentation of statistical data collected by various agencies of the United States Government, State agencies, trade associations, and private research organizations.

Scope of the Classification

The Classification is intended to cover the entire field of economic activities: agriculture, forestry, and fisheries; mining; construction; manufacturing; transportation, communication, electric, gas, and sanitary services; wholesale and retail trade; finance, insurance, and real estate; services; and government.

This edition of the Manual replaces the 1957 edition and the 1958 and 1963 Supplements. The content of the Manual has been expanded by the inclusion of; (1) an alphabetic list of principal products, processes, and services for each 4-digit Industry; (2) a list of Standard Short Titles; (3) a more detailed procedure for the identification and classification of Central Administrative Offices and Auxiliary Units; and (4) a conversion table at the 4-digit Industry level between the 1957 and 1967 editions of the classification.

Principles of the Classification

The Classification was prepared by the Technical Committee on Standard Industrial Classification. The work of the Technical Committee was carried on under the sponsorship and general supervision of the Office of Statistical Standards of the Bureau of the Budget, Executive Office of the President.

In preparing the Classification, the Technical Committee was guided by the following general principles:

(1) The Classification should conform to the existing structure of American industry.

(2) The reporting units to be classified are establishments, rather than legal entities or companies.

(3) Each establishment is to be classified according to its major activity.

* Standard Industrial Classification Manual 1967 (Washington, D.C.: US Bureau of the Budget), pp. ix - xii.

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(4) To be recognized as an industry, each group of establishments must have significance from the standpoint of the number of persons employed, volume of business, and other important economic features, such as the number of establishments.[1] The procedure followed as a guide in measuring the economic significance of manufacturing industries is outlined in Appendix D.

Definition of Establishment

The Standard Industrial Classification distinguishes two broad classes of establishments: (1) "operating establishments" or economic units which produce goods or services; and (2) central administrative office and auxiliary units which manage or provide services for other establishments of the same company.

Operating Establishments.—An "operating establishment" is an economic unit which produces goods or services—for example, a farm, a mine, a factory, a store. In most instances, the establishment is at a single physical location; and it is engaged in only one, or predominantly one, type of economic activity for which an industry code is applicable.

Where a single physical location encompasses two or more distinct and separate economic activities for which different industrial classification codes seem applicable, such activities should be treated as separate establishments and classified in separate industries, provided it is determined that: (1) such activities are not ordinarily associated with one another at common physical locations; (2) no one industry description in the Standard Industrial Classification includes such combined activities; (3) the employment in each such economic activity is significant[2]; and (4) reports can be prepared on the number of employees, their wages and salaries, and other establishment type data. An establishment is not necessarily identical with the business concern or firm, which may consist of one or more establishments. Also, it is to be distinguished from organizational subunits, departments, or divisions within an establishment. Supplemental interpretations of the definition of an establishment are included in the industry descriptions of the Standard Industrial Classification.

Central Offices and Auxiliary Units.—A central administrative office is an establishment primarily engaged in management and general administrative functions performed centrally for other establishments of the same company.

An auxiliary unit is an establishment primarily engaged in performing supporting services for other establishments of the same company rather than for the general public or for other business firms.

Activities of the type performed at separate central administrative office and auxiliary establishments are, in fact, normally carried on as an integral

[1] An exception to this principle is found in the grouping of establishments into industries described as "not elsewhere classified."

[2] Usually 100 or more employees in mining or manufacturing activity, and 50 or more employees in activities other than mining or manufacturing.

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part of individual operating establishments. Hence, this type of activity is only partially measured by the statistics on separately reported central administrative office and auxiliary establishments.

See Appendix A for a more complete description of separate central administrative office and auxiliary establishments and for industrial classifications of these establishments. This appendix also describes the principal border lines between operating and auxiliary establishments.

Basis of Establishment Classification-Code Assignment

Each establishment is assigned an industry code on the basis of its major activity, which is determined by the product or group of products produced or handled, or services rendered. Ideally, the principal product or service should be determined by reference to "value added." In practice, however, it is rarely possible to obtain this information for individual products or services, and it becomes necessary to adopt some other criteria which may be expected to give approximately the same results. It is recommended, therefore, that, as far as possible, the following characteristics be used for each of the major economic sections:

Economic Section	*Characteristics*
Agriculture, forestry, and fisheries (except agricultural services)	Value of production
Mining	Value of production
Construction	Value of work done
Manufacturing	Value of production
Wholesale and retail trade	Value of sales
Finance, insurance, and real estate	Value of receipts
Services (including agricultural services)	Value of receipts
Transportation, communication, electric, gas, and sanitary services	Value of receipts
Government	Function

Occasionally, in cases of mixed business, the above characteristics cannot be determined or estimated for each product or service, and less frequently a classification based upon the recommended characteristic will not represent adequately the process or activity of the establishment. In such cases, if employment information is available, the major activity should be determined by the activity in which the greatest number of employees worked.

Structure of Classification

The structure of the Classification makes it possible to classify establishments by industry on a two-digit, a three-digit, or a four-digit basis, according to the degree of detail in information which may be needed. It permits an agency to select the level of detail considered most appropriate for presentation of its data. Also, it permits an agency to use additional subdivisions in adopting this Classification for its own use, while still retaining comparability with the classifications used by other agencies. Furthermore, comparability with the Classification may be maintained on a two-digit basis by combining groups or industries within a Major Group; similarly, comparability may be main-

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tained on a three-digit basis by combining industries within a three-digit group. All groupings or industry subdivisions should be clearly labeled.

Agencies which use the three-digit code may use a zero temporarily on the third-digit position for coding reports on which available information is inadequate for proper allocation to a specific three-digit group. For example, Major Group 25. Furniture and Fixtures, is divided into the following groups:

251 Household Furniture
252 Office Furniture
253 Public Building and Related Furniture
254 Partitions, Shelving, Lockers, and Office and Store Fixtures
259 Miscellaneous Furniture and Fixtures

If an establishment is described as engaged in manufacturing furniture, the report should be coded as "250" until sufficient information is obtained to assign the establishment to the appropriate group.

An agency which uses the four-digit code may use a zero temporarily, in the fourth position, to code reports for which the information available is inadequate for proper allocation to a specific industry.

It will be noted that whenever number nine has been used on the third- or fourth-digit position, it has been assigned to miscellaneous three-digit groups or four-digit industries covering establishments not elsewhere classified. The establishments grouped at the four-digit level as "not elsewhere classified" may not constitute homogeneous groups but are treated as separate industries for purposes of this Classification.

Acknowledgments

In the preparation of this revised edition of the Standard Industrial Classification Manual, the Technical Committee wishes to acknowledge the valuable assistance received from the Advisory Council on Federal Reports, the Federal Statistical Users Conference, the American Marketing Association, various trade unions, trade associations, and Federal and State agencies.

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Division B

Mining

The Division as a Whole

This division includes all establishments primarily engaged in mining. Mining is here used in the broad sense to include the extraction of minerals occurring naturally: solids, such as coal and ores; liquids, such as crude petroleum; and gases, such as natural gas. The term "mining" is also used in the broad sense to include quarrying, well operation, milling (crushing, screening, washing, flotation, etc.), and other preparation needed to render the material marketable. Exploration and development of mineral properties are included. Services performed on a contract, fee, or other basis in the development or operation of mineral properties are classified separately but within this division.

Mining operations are classified, by industry, on the basis of the principal mineral produced, or, if there is no production, on the basis of the principal mineral for which development work is in process. The mining of culm banks, ore dumps, and tailing piles is classified as mining according to the principal mineral product derived.

Excluded from this division are the purification and distribution of water (Industry 4941), bottling and distributing of natural spring and mineral waters (Industry 5049), and the crushing, grinding, or otherwise treating of certain earths, rocks, and minerals not in conjunction with mining activities (Industry 3295).

Major Group 10 - Metal mining
Major Group 11 - Anthracite mining
Major Group 12 - Bituminous coal and lignite mining
Major Group 13 - Crude petroleum and natural gas
Major Group 14 - Mining and quarrying of nonmetallic minerals, except fuels

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Contract Construction

The Division as a Whole

This division includes establishments primarily engaged in contract construction. The term "construction" includes new work, additions, alterations, and repairs. Three broad types of contract construction activity are covered: namely, (1) building construction by general contractors, (2) other construction by general contractors, and (3) construction by special trade contractors. Operative builders who build on their own account for resale or lease, and investment builders who build structures on their own account for rental, are classified in Major Group 65, Real Estate.

General building contractors are primarily engaged in the construction of dwellings, office buildings, stores, farm buildings, and other projects of a similar character. General contractors in fields other than buildings, often referred to as heavy construction contractors, are primarily engaged in the construction of highways, streets, bridges and tunnels, docks and piers, dams and water projects; sewage collection, treatment, and disposal facilities; and storm sewer systems, air fields, and other heavy construction which involves either earth moving or the erection of structures and appurtenances, other than buildings. The removal of overburden is classified in Division B, Mining.

Special trade contractors are primarily engaged in specialized construction activities such as plumbing, painting, electrical work, and carpentry.

General contractors in both the building field and the heavy construction field usually assume responsibility for an entire construction project, but may subcontract to others those portions of the project requiring special skills or equipment. Special trade contractors may work for general contractors under subcontracts or may work directly for the owner of the property.

Force account construction (construction work performed by an establishment primarily engaged in some business other than construction, for its own account and use and by its own employees) is not included in this division but is classified according to the principal activity normally carried on in the establishment or which will be conducted at the site when the construction work is completed.

The installation of prefabricated building equipment and materials by general contractors and special trade contractors is classified in this division. Similar installation work performed as a service incidental to sale by employees of an establishment manufacturing or selling prefabricated equipment and

Major Group 15 - Building construction - general contractors

Major Group 16 - Construction other than building construction-general contractors

Major Group 17 - Construction - special trade contractors

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Division D

Manufacturing

The Division a Whole

The manufacturing division includes those establishments engaged in the mechanical or chemical transformation of inorganic or organic substances into new products, and usually described as plants, factories, or mills, which characteristically use power driven machines and materials handling equipment. Establishments engaged in assembling component parts of manufactured products are also considered manufacturing if the new product is neither a structure nor other fixed improvement.

The materials processed by manufacturing establishments include products of agriculture, forestry, fishing, mining, and quarrying. The final product of a manufacturing establishment may be "finished" in the sense that it is ready for utilization or consumption, or it may be "semifinished" to become a raw material for an establishment engaged in further manufacturing. For example, the product of the copper smelter is the raw material used in electrolytic refineries; refined copper is the raw material used by copper wire mills; and copper wire is the raw material used by certain electrical equipment manufacturers.

The materials used by manufacturing establishments may be purchased directly from producers, obtained through customary trade channels, or secured without recourse to the market by transferring the product from one establishment to another which is under the same ownership. Manufacturing production is usually carried on for the wholesale market, for interplant transfer, or to order for industrial users, rather than for direct sale to the domestic consumer.

Printing, publishing, and industries servicing the printing trades are classified as manufacturing industries.

There are borderline cases between the manufacturing division and the other divisions in the classification system. Specific instances will be found in the descriptions of the individual industries. A few of the more important examples are:

Agriculture, Forestry, and Fisheries

Processing on farms is not considered manufacturing if the raw materials are grown on the farm and if the manufacturing activities are on a small

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Major Group 19 - Ordnance and accessories
Major Group 20 - Food and kindred products
Major Group 21 - Tobacco manufactures
Major Group 22 - Textile mill products
Major Group 23 - Apparel and other finished products made from fabrics and similar materials
Major Group 24 - Lumber and wood products, except furniture

Division D - MANUFACTURING (con't)

Major Group 25 - Furniture and fixtures
Major Group 26 - Paper and allied products
Major Group 27 - Printing, publishing, and allied industries
Major Group 28 - Chemicals and allied products
Major Group 29 - Petroleum refining and related industries
Major Group 30 - Rubber and miscellaneous plastics products
Major Group 31 - Leather and leather products
Major Group 32 - Stone, clay, glass, and concrete products
Major Group 33 - Primary metal industries
Major Group 34 - Fabricated metal products, except ordnance, machinery, and transportation equipment
Major Group 35 - Machinery, except electrical
Major Group 36 - Electrical machinery, equipment, and supplies
Major Group 37 - Transportation equipment
Major Group 38 - Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks
Major Group 39 - Miscellaneous manufacturing industries

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Division E

Transportation, Communications, Electric, Gas, and Sanitary Services

The Division as a Whole

This division includes enterprises engaged in passenger and freight transportation by railway, highway, water, or air, or furnishing services related to transportation; petroleum pipe line transportation; warehousing; telephone and telegraph communication services; radio and television broadcasting; and the supplying of electricity, gas, steam, water, or sanitary services. Industries assigned to this division are to a large extent regarded legally as having a semi-public character. Most of the establishments included are regulated by commissions or other public authorities as to the rates or prices they may charge and the services they may render. The workers and physical facilities of an enterprise classifiable in this division are often distributed over an extensive geographic area.

Major Group 40 - Railroad transportation
Major Group 41 - Local and suburban transit and interurban passenger transportation
Major Group 42 - Motor freight transportation and warehousing
Major Group 44 - Water transportation
Major Group 45 - Transportation by air
Major Group 46 - Pipe line transportation
Major Group 47 - Transportation services
Major Group 48 - Communication
Major Group 49 - Electric, gas, and sanitary services

Division F

Wholesale and Retail Trade

Major Group 50 - Wholesale trade
Major Group 52 - Building materials, hardware, and farm equipment dealers
Major Group 53 - Retail trade - general merchandise
Major Group 54 - Food stores
Major Group 55 - Automotive dealers and gasoline service stations
Major Group 56 - Apparel and accessory stores
Major Group 57 - Furniture, home furnishings, and equipment stores
Major Group 58 - Eating and drinking places
Major Group 59 - Miscellaneous retail stores

Division G

Finance, Insurance, and Real Estate

The Division as a Whole

This division comprises establishments operating primarily in the fields of finance, insurance, and real estate. Finance includes banks and trust companies, credit agencies other than banks, holding (but not predominantly operating) companies, other investment companies, brokers and dealers in securities and commodity contracts, and security and commodity exchanges. Insurance covers carriers of all types of insurance, and insurance agents and brokers. Real estate includes owners, lessors, lessees, buyers, sellers, agents, and developers of real estate.

In most cases, establishments included in this division are primarily engaged in specialized activities in either the finance, insurance, or real estate field and can therefore be classified in one of the major groups provided for these activities. However, there are some small establishments which are regularly engaged in some combination of finance, insurance, real estate, and law, no one of which is the principal activity. A separate major group (66) has been provided for such establishments.

Major Group 60 - Banking
Major Group 61 - Credit agencies other than banks
Major Group 62 - Security and commodity brokers, dealers, exchanges, and services
Major Group 63 - Insurance carriers
Major Group 64 - Insurance agents, brokers, and service
Major Group 65 - Real estate
Major Group 66 - Combinations of real estate, insurance, loans, law offices
Major Group 67 - Holding and other investment companies

Division H

Services

The Division as a Whole

This division includes establishments primarily engaged in rendering a wide variety of services to individuals and business establishments. Hotels and other lodging places; establishments providing personal, business, repair, and amusement services; medical, legal, engineering, and other professional services; educational institutions; nonprofit membership organizations; and other miscellaneous services are included.

Major Group 70 - Hotels, rooming houses, camps, and other lodging places
Major Group 72 - Personal services
Major Group 73 - Miscellaneous business services
Major Group 75 - Automobile repair, automobile services, and garages
Major Group 76 - Miscellaneous repair services
Major Group 78 - Motion pictures
Major Group 79 - Amusement and recreation services, except motion pictures
Major Group 80 - Medical and other health services
Major Group 81 - Legal services
Major Group 82 - Educational services
Major Group 84 - Museums, art galleries, botanical and zoological gardens
Major Group 86 - Nonprofit membership organizations
Major Group 88 - Private households
Major Group 89 - Miscellaneous services

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Division I

Government

The Division as a Whole

This division includes all Federal, State, local, and international government activities, such as the legislative, judicial, and administrative functions, as well as government owned and operated business enterprises.

Agencies desiring to classify industrially government owned and operated business enterprises beyond the two digit level provided in each of the Major Groups of this division will use the codes and definitions in Major Groups 01-89. Such agencies will provide for the separate presentation of public and private industrial data as found appropriate.

This division consists of the following Major Groups:

91—Federal Government
92—State Government
93—Local Government
94—International Government

Each major group is further subdivided into four digit industries representing the scope of each major group between 01-89. The first two digits of each four digit industry represent the level of government (91-94 above), the third and fourth digits represent the industrial activity contained in each of the Major Groups 01-89, with all regular government functions, that is, legislative, judicial, and administrative, classified in the industry with 90 as the third and fourth digits. The four digit detail for Major Groups 92-94 is the same as that presented for Major Group 91.

APPENDIX E

NATIONAL I-O MATRIX INDUSTRY STRUCTURE

NATIONAL I-O MATRIX INDUSTRY STRUCTURE*

Division "A" Agriculture

Agriculture, forestry and fisheries

Agriculture

Forestry

Fisheries

Division "B" Mining

Mining

Metal Mining

Coal Mining

Crude Petroleum and Natural Gas

Quarrying and Nonmetallic Mining

Division "C" Construction Industry

Division "D" Manufacturing

Manufacturing

Durable goods manufacturing

Lumber and wood products, excluding furniture

Logging camps and contractors

Sawmills, millwork, and miscellaneous wood products

Furniture and fixtures

Stone, clay, and glass products

Glass and glass products

Cement, concrete and plaster

Structural clay products

Pottery and related products

Miscellaneous nonmetallic mineral and stone products

Primary metals industries

Blast furnances and steel works

Other primary metals industries

Primary nonferrous metals

*Tomorrow's Manpower Needs, Vol. IV, The National Industry-Occupational Matrix and Other Manpower Data, Bulletin No. 1606, pp. 19 - 22.

Fabricated metal products
Machinery, except electrical
Farm machinery and equipment
Office machinery
Miscellaneous machinery
Electrical machinery, equipment, and supplies
Transportation equipment
Motor vehicles and equipment
Aircraft and parts
Ship and boat building
Railroad and other transportation equipment
Instruments and allied products
Instruments and fire control
Watches and clock devices
Miscellaneous manufacturing
Nondurable goods manufacturing
Food and kindred products
Meat products
Dairy products
Canning, preserving, and freezing
Grain mill products
Bakery products
Beverage industries
Other food products
Tobacco manufacturers
Textile mill products
Apparel and related products
Paper and allied products
Pulp, paper, and paperboard mills
Paperboard containers and boxes
All other paper products
Printing, publishing and allied products

Chemicals and allied products
Synthetic fibers
Drugs and medicine
Paints, varnishes, and related products
Other chemicals
Petroleum refining and related industry
Petroleum refining
Other petroleum and coal products
Rubber and miscellaneous plastic products
Rubber products
Miscellaneous plastic products
Leather and leather products
Leather tanning and finishing
Footwear, except rubber
All other leather products

Division "E" Transportation, Communication, and Public Utilities (T. C. & U.)

Transportation, communication, and public utilities
Transportation
Railroad transportation
Local and suburban transit and interurban passenger transportation
Local and interurban except taxis
Taxis
Motor freight transportation and storage
Trucking
Warehousing
Water transportation
Transportation by air
Pipelines
Transportation services
Communication and public utilities
Communication
Telephone

Telegraph
Radio and television
Electric, gas, and sanitary services
Electric, gas, and steam
Water and irrigation
Sanitary services

Division "F" Wholesale and Retail Trade

Wholesale and retail trade
Wholesale trade
Motor vehicles and equipment
Drugs and chemicals
Dry goods and apparel
Groceries and related
Electrical goods, plumbing, and heating supplies
Machinery and equipment
Farm produce and miscellaneous
Retail trade
Building materials, hardware, and farm equipment
General merchandising
Limited price stores
Other general merchandise
Food and drug stores
Automobile dealers and gas stations
Automobile dealers
Gas stations
Apparel and accessories
Furniture, etc.
Eating and drinking places
Miscellaneous retail stores
Drug stores
Other retail stores

Division "G" Finance, Insurance, and Real Estate (F.I.R.E.)

- Finance, insurance, and real estate
  - Finance
  - Banks and credit agencies
  - Stock brokers and investment companies
  - Insurance
  - Real Estate

Division "H" Services

- Services
  - Private household
- Services, except private households
  - Hotels and other lodging places
  - Personal services
    - Laundry, cleaning, and valet services
    - All other personal services
  - Miscellaneous business services
    - Advertising
    - Other miscellaneous business services
  - Automobile repair services and garage
  - Miscellaneous repair services
  - Entertainment and recreation
    - Motion pictures and theaters
    - Miscellaneous entertainment and recreation
  - Medical and other health services
    - Hospitals
    - Other medical and health services
  - Legal services
  - Educational services
  - Nonprofit membership organizations
    - Welfare and religious
    - Other nonprofit

Miscellaneous services

Engineering and architectural

Accounting and bookkeeping

All other professional services

Division "I" Public Administration (Gov't)

Public Administration

Postal services

Other federal public administration

State government

Local government

APPENDIX F

"EARLY WARNING" MATRICES (TABLE A - C-1)

Tables A-1 and A-2 provide further break-down of the data into coefficients (percentage distribution). Table A-1 shows the percentage distribution of occupation by industrial activity. The Mining Industry's 189 Professional and Technical workers account for only 1% of the total 18,042 Professional and Technical workers of all industries. Table A-2 shows the percentage distribution of all industry by occupation. For example, in this table (Table A-2) the same I-O cell as in Table A summary, showing the Professional and Technical workers in the Mining Industry (row 2 - column 2) also represents 11.3% of Mining Industry's total employment figure of 1677 (Table A summary, row 1 - column 2).

Table A-3 represents Current Employment by Occupation and Industry, Ventura County - 1971 Average and gives even more occupational details. The Industry Divisions remain the same but the occupational detail is much finer. This table begins with the broad Occupational Category, then descends to Occupational Group, followed by Occupational Title for the individual job (for BLS occupational structure see Appendix B).

Table B-1 and C-1 follow the same detailed format as Table A-3. Table B-1 shows the projected change in employment between the years 1971 and 1975, while Table C-1 gives the overall projected employment for 1975, which includes both current 1971 figures from Table A-3 plus projected change 1971 to 1975 from Table B-1. Note that change can be either positive or negative.

NOTE: Summary Tables are provided for each section, current (A), projected change (B), projected total. (C)

Table A

Summary Industry-Occupation Matrix 1971
Employment Totals

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VENTURA COUNTY

OCCUPATIONAL CATEGORY	TOTAL	Division "B" MINING	Division "C" CONST	Division "D" MFG	Division "E" T.C.& U.	Division "F" TRADE	Division "G" F.I.R.E.	Division "H" SERVICE	Division "I" GOV'T
TOTAL	92,492	1,677	4,404	14,166	4,040	21,394	3,388	15,238	28,185
Prof-Tech	18,042	189	317	2,312	266	301	239	4,864	9,554
Mgr	10,213	166	497	834	320	4,242	1,024	1,111	2,019
Clerical	20,388	177	266	1,909	968	3,417	1,567	2,598	9,486
Sales	5,613	5	16	474	47	4,486	405	141	35
Craftsmen	10,721	410	2,156	2,528	866	1,864	31	1,033	1,833
Operatives	11,646	699	519	5,386	1,093	2,614	13	596	726
Services	12,770	22	23	236	120	3,657	104	4,713	3,895
Laborers	3,032	0	609	431	360	813	5	184	630

Table A-1
Coefficients by Occupation

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VENTURA COUNTY

OCCUPATIONAL CATEGORY \ INDUSTRY DIVISION	TOTAL	Division "B" MINING	Division "C" CONST	Division "D" MFG	Division "E" T.C.& U.	Division "F" TRADE	Division "G" F.I.R.E.	Division "H" SERVICE	Division "I" GOV'T
TOTAL	100.0	1.8	4.7	15.3	4.4	23.1	3.7	16.5	30.5
Prof-Tech	100.0	1.0	1.7	12.8	1.5	1.7	1.3	27.0	53.0
Mgr	100.0	1.6	4.9	8.2	3.1	41.5	10.0	10.9	19.8
Clerical	100.0	0.9	1.3	9.4	4.7	16.8	7.7	12.7	46.5
Sales	100.0	0.2	0.3	8.5	0.8	79.9	7.2	2.5	0.6
Craftsmen	100.0	3.8	20.1	23.6	8.1	17.4	0.3	9.6	17.1
Operatives	100.0	6.0	4.5	46.3	9.4	22.4	0.1	5.1	6.2
Services	100.0	0.2	0.2	1.9	0.9	28.6	0.8	36.9	30.5
Laborers	100.0	0.0	20.1	14.2	11.9	26.8	0.2	6.0	20.8

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Table A-2
Coefficients by Industry

VENTURA COUNTY

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OCCUPATIONAL CATEGORIES	TOTAL	Division "B" MINING	Division "C" CONST	Division "D" MFG	Division "E" T.C.& U.	Division "F" TRADE	Division "G" F.I.R.E.	Division "H" SERVICE	Division "I" GOV'T
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Prof-Tech	19.5	11.3	7.2	16.3	6.6	1.4	7.0	31.9	33.9
Mgr	11.0	9.9	11.3	5.9	7.9	19.8	30.2	7.3	7.2
Clerical	22.1	10.6	6.0	13.6	24.0	16.0	46.3	17.1	33.7
Sales	6.1	0.5	0.4	3.4	1.2	21.0	12.0	0.9	0.1
Craftsmen	11.6	24.5	49.0	17.9	21.4	8.7	0.9	6.8	6.5
Operatives	12.6	41.9	11.8	38.1	27.0	12.2	0.4	3.9	2.6
Service	13.8	1.3	0.5	1.7	3.0	17.1	3.1	30.9	13.8
Laborers	3.3	0.0	13.8	3.1	8.9	3.8	0.1	1.2	2.2

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Table A-3

Current Employment by Occupation and Industry
Ventura County - 1971 Average

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	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Total	92,492	1,677	4,404	14,166	4,040	21,394	3,388	15,238	28,185
Professional, technical, kindred	18,042	189	317	2,312	266	301	239	4,864	9,554
Engineers, technical	1,868	61	118	981	55	32	0	126	495
Engineers, aeronautical	277	0	0	195	0	0	0	6	76
Engineers, chemical	50	4	1	30	0	0	0	6	9
Engineers, civil	253	4	105	23	10	0	0	7	104
Engineers, electrical	476	3	3	274	30	2	0	37	127
Engineers, industrial	195	5	1	145	3	1	0	16	24
Engineers, mechanical	268	4	4	169	5	3	0	17	66
Engineers, metallurg, etc.	25	1	0	17	0	0	0	5	2
Engineers, mining	32	30	0	0	0	0	0	0	2
Other engineers, technical	277	4	3	120	5	24	0	35	86
Natural Scientists	728	38	2	130	3	4	1	156	394
Chemists	172	3	1	63	2	1	0	47	55
Agricultural scientists	100	0	0	6	0	0	0	8	86
Biological scientists	121	0	0	5	0	0	0	39	77
Geologists, geophysicists	71	33	1	2	0	0	1	8	26
Mathematicians	91	0	1	28	0	3	0	18	41
Physicists	110	0	0	21	0	0	0	22	67
Other natural scientists	67	0	0	8	0	0	0	16	43
Technicians, exc. med., dental	1,698	47	131	589	58	37	1	152	683
Draftsmen	284	14	32	155	10	8	0	26	39
Surveyors	78	4	23	0	3	1	1	3	43
Air traffic controllers	67	0	0	0	0	0	0	0	67
Radio Operators	52	1	1	1	7	0	0	1	41
Technicians, other	1,220	27	75	431	38	29	0	123	497

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Ta A-3

Current Employment by Occupation and Industry
Ventura County - 1971 Average
- 2 -

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	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Medical, other health wkrs	2,059	1	0	17	2	7	1	1,823	208
Dentists	116	0	0	0	0	0	0	112	4
Dietitians, nutritionists	39	0	0	0	0	1	0	28	10
Nurses, professional	813	0	0	8	2	3	1	740	59
Optometrists	18	0	0	0	0	0	0	18	0
Osteopaths	15	0	0	0	0	0	0	15	0
Pharmacists	19	0	0	1	0	2	0	11	5
Physicians & surgeons	355	0	0	0	0	0	0	327	28
Psychologists	74	0	0	0	0	0	0	29	45
Technicians, med., dental	367	0	0	4	0	0	0	344	23
Veterinarians	21	0	0	0	0	0	0	1	20
Other medical, health wkrs	212	0	0	0	0	0	0	197	15
Teachers	5,185	0	0	3	2	18	2	612	4,548
Teachers, elementary	2,079	0	0	0	0	0	0	239	1,840
Teachers, secondary	1,861	0	0	0	0	0	0	210	1,651
Teachers, college	767	0	0	0	0	0	0	84	683
Teachers, other	458	0	0	3	2	18	2	81	377
Social scientists	162	0	1	12	3	5	11	24	106
Economists	64	0	0	2	1	3	7	8	43
Statisticians & actuaries	67	0	1	8	3	2	4	11	39
Other social scientists	32	0	0	1	0	0	0	5	26
Other prof., tech. & kindred	6,331	38	67	575	143	202	224	1,969	3,113
Accountants & auditors	707	22	16	105	31	71	61	48	353
Airplane pilots, navigators	56	1	1	3	30	1	0	3	17
Architects	16	0	2	0	0	0	0	6	8
Wkrs in arts, entertainment	1,346	0	1	67	5	41	1	608	623
Clergymen	465	0	0	0	0	0	0	460	5
Designers, exc. design draft.	84	0	6	36	1	13	0	26	2
Editors & reporters	127	0	0	55	4	6	3	31	28
Lawyers & judges	288	2	2	4	2	3	3	121	151
Librarians	213	0	0	2	0	0	1	33	177
Personnel & lab. rel. wkrs	335	2	3	41	8	24	6	27	224
Photographers	67	0	0	15	1	1	0	30	20
Social & welfare workers	449	0	0	0	0	0	0	100	349
Prof., tech., kindred, n.e.c.	2,152	6	38	235	59	43	148	472	1,151

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Table A-3

Current Employment by Occupation and Industry
Ventura County - 1971 Average
- 3 -

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Managers, officials, proprietors	10,213	166	497	834	320	4,242	1,024	1,111	2,019
Conductors, railroad	34	0	0	0	33	0	0	0	1
Creditmen	93	0	0	11	1	54	21	6	0
Officers, pilots, engrs. ship.	26	1	2	0	21	0	0	1	1
Postmasters & assistants	170	0	0	0	0	0	0	0	170
Purchasing agents	200	4	2	86	3	30	5	17	53
Managers, office, prop., n.e.c.	9,698	159	494	744	262	4,160	996	1,089	1,794
Clerical & kindred workers	20,388	177	266	1,909	968	3,417	1,567	2,598	9,486
Stenos, typists, secretaries	4,974	65	79	558	131	444	383	1,093	2,221
Office machine operators	820	7	3	122	46	187	165	65	225
Other clerical, kindred wkrs	14,590	103	184	1,229	792	2,788	1,018	1,439	7,037
Accounting clerks	562	5	30	56	31	151	30	48	211
Bookkeepers, hand	882	11	37	66	13	423	188	125	19
Bank tellers	266	0	0	0	0	0	266	0	0
Cashiers	1,074	0	1	6	31	848	70	64	54
Mail carriers	1,440	0	0	0	0	0	0	0	1,440
Postal clerks	1,689	0	0	0	0	0	0	0	1,689
Shipping, receiv. clerks	292	2	1	128	10	118	4	11	18
Telephone operators	437	1	2	21	189	49	34	67	74
Clerical & kindred, n.e.c.	7,933	78	114	943	518	1,200	425	1,121	3,534
Sales Workers	5,613	9	16	474	47	4,486	405	141	35
Craftsmen, foremen & kindred	10,721	410	2,156	2,528	866	1,864	31	1,033	1,833
Construction craftsmen	2,740	96	1,702	216	73	130	2	135	386
Carpenters	734	6	523	31	8	57	1	37	71
Bricklayers & tile setters	180	1	153	4	0	13	0	2	7
Cement, concrete finishers	59	0	58	0	0	1	0	0	0
Electricians	485	22	159	118	31	11	0	27	117
Excavating, grading mach. opr.	325	57	210	4	8	4	0	10	32
Painters & paperhangers	414	1	252	9	6	20	0	44	82
Plasters	49	0	44	0	0	0	0	2	3
Plumbers & pipefitters	370	5	205	40	19	21	0	11	69
Roofers & slaters	57	0	49	0	0	5	0	0	3
Structural metalworkers	56	0	49	5	1	0	0	0	1

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Table A-3

Current Employment by Occupation and Industry
Ventura County - 1971 Average
- 4 -

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Foremen n.e.c.	1,451	108	138	652	114	205	2	52	180
Metalworking crafts exc. mech.	956	14	64	700	34	8	0	18	118
Machinists & related occ.	407	7	3	324	23	0	0	3	47
Blksmiths, forgmn, hammersm.	15	3	2	3	1	0	0	4	2
Boilermakers	15	0	6	3	2	0	0	3	1
Heat treaters, annealers	11	0	0	10	0	0	0	0	1
Millwrights	44	1	9	31	0	1	0	1	1
Molders, metal exc. coremakers	15	0	0	15	0	0	0	0	0
Patternmakers, metal, wood	53	0	0	41	0	0	0	2	10
Rollers & roll hands	6	0	0	6	0	0	0	0	0
Sheet metal workers	227	0	46	114	6	6	0	5	50
Toolmakers & diemakers	155	0	0	150	0	0	0	0	5
Printing trades craftsmen	247	0	0	191	1	10	3	8	34
Compositors, typesetters	110	0	0	84	0	5	3	4	14
Electrotypers, sterotypes	2	0	0	2	0	0	0	0	0
Engravers, exc. photoengr.	12	0	0	9	0	1	0	0	2
Photoengvrs, lithographers	35	0	0	32	0	0	0	0	3
Pressmen, plate printers	74	0	0	57	0	3	0	4	10
Transport. & pub. util. craft.	366	2	15	18	307	0	1	3	20
Linemen & servicemen	325	0	15	18	268	0	1	3	20
Locomotive engineers	37	2	0	0	34	0	0	0	1
Locomotive firemen	5	0	0	0	5	0	0	0	0
Mechanics & repairmen	3,811	95	117	584	245	1,205	12	647	903
Airplane mech. & repairmen	396	0	0	148	40	5	0	1	202
Motor vehicle mechanics	1,135	4	6	12	57	729	0	258	69
Office machine mechanics	70	0	0	3	0	54	0	9	4
Radio & t.v. mechanics	189	0	1	11	0	40	0	78	59
RR & car mechanics	32	0	0	2	29	0	0	0	1
Other mechanics & repair	1,936	89	110	409	114	362	9	284	569

Table A-3

Current Employment by Occupation and Industry
Ventura County - 1971 Average
- 5 -

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	Total All Ind.	Mining	Const.	Mfg.	T.C.U.	Trade	F.I.R.E.	Service	Gov't
Other craftsmen & kindred	1,303	89	121	301	94	312	7	186	193
Bakers	122	0	0	58	0	38	0	10	16
Cabinetmakers	60	0	6	9	0	30	0	8	7
Crane, derrick, hoist men	91	14	24	25	8	11	0	2	7
Glaziers	32	0	9	3	0	19	0	1	0
Jewelers & watchmakers	40	0	0	12	0	18	0	10	0
Loom fixers	0	0	0	0	0	0	0	0	0
Opticians, lens grinders	31	0	0	13	0	14	0	3	1
Inspectors, log & lumber	6	0	0	1	0	4	0	1	0
Inspectors, other	105	4	25	3	43	9	1	20	0
Upholsterers	57	0	1	6	0	16	0	27	7
Craftsmen & kindred n.e.c.	749	68	56	164	43	150	6	104	158
Operatives & kindred workers	11,646	699	519	5,386	1,093	2,614	13	596	726
Drivers & deliverymen	2,812	103	203	476	819	821	3	83	304
Drivers, bus, truck, tractor	2,073	100	200	223	715	485	0	65	285
Deliverymen & routemen	746	1	3	254	104	340	3	20	21
Transp. & pub. util. oprs.	124	1	3	7	104	1	0	1	7
Brakemen & switchmen, RR	80	0	0	2	78	0	0	0	0
Power station operators	20	0	1	4	10	1	0	1	3
Sailors & deckhands	23	1	3	0	16	0	0	0	3
Semiskilled metal working occ.	1,448	27	52	1,249	16	28	0	48	28
Furnacemen, smeltermen, pour.	9	1	0	9	0	0	0	0	0
Heaters, metal	2	0	0	2	0	0	0	0	0
Welders & flame cutters	394	26	52	197	15	28	0	48	28
Assemblers, mtlwkrs, class A	167	0	0	167	0	0	0	0	0
Assemblers, mtlwkrs, class B	489	0	0	489	0	0	0	0	0
Inspectors, mtlwkrs, class B	195	0	0	195	0	0	0	0	0
Machine tool opr., class B	158	0	0	158	0	0	0	0	0
Electroplaters	9	0	0	9	0	0	0	0	0
Electroplaters, helpers	12	0	0	12	0	0	0	0	0

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Table A-3

Current Employment by Occupation and Industry
Ventura County - 1971 Average
- 6 -

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Semiskilled textile occup.	288	0	0	288	0	0	0	0	0
Knitters, loopers, toppers	0	0	0	0	0	0	0	0	0
Spinners, textile	1	0	0	1	0	0	0	0	0
Weavers, textile	0	0	0	0	0	0	0	0	0
Sewers & stitchers, mfg.	287	0	0	287	0	0	0	0	0
Other operatives & kindred	6,963	566	260	3,362	153	1,757	10	468	387
Asbestos, insulation wkrs.	23	0	14	5	0	2	0	0	2
Attend. auto service parking	750	0	1	1	1	707	2	34	4
Blasters & powdermen	8	6	2	0	0	0	0	0	0
Laundry, dry cleaning opr.	116	0	0	2	0	3	0	88	23
Meat cutters, exc. meat pckng	214	0	0	1	0	201	0	3	9
Mine operative laborers, n.e.c.	523	523	0	0	0	0	0	0	0
Operatives & kindred, n.e.c.	5,349	35	245	3,353	151	832	7	341	353
Service Workers	12,768	22	23	236	120	3,657	104	4,813	3,895
Private household workers	0	0	0	0	0	0	0	0	0
Protective service workers	2,131	5	4	67	19	22	21	109	1,899
Firemen	485	0	0	3	0	0	0	4	477
Guards, watchmen, doorkprs	601	6	4	60	11	19	21	96	393
Police, oth. law enforce. off.	1,043	0	0	3	7	2	0	8	1,029
Food service workers	3,751	2	2	15	11	2,663	3	480	584
Bartenders	341	0	0	0	0	310	0	31	0
Cooks, exc. priv. households	1,255	2	1	5	6	712	1	199	334
Counter & fountain wkrs	440	0	1	5	1	228	1	47	158
Waiters & waitresses	1,716	0	1	2	4	1,413	1	203	95
Other service workers	6,772	12	17	151	90	971	81	4,116	1,411
Airline stewards, stwdes	4	0	0	0	23	0	0	0	0
Attendants, hosp, other inst.	1,024	0	0	0	0	0	0	989	35
Charwomen & cleaners	365	1	4	15	8	69	18	182	75
Janitors & sextons	1,299	6	8	71	21	81	40	466	624
Nurses, practical	412	0	0	0	0	0	0	403	9
Service workers, n.e.c.	3,654	4	6	54	37	819	23	2,073	669
Laborers, except farm & mine	2,625	0	609	331	360	813	5	184	630

Table B

Summary Projected Employment Change by Occupation and Industry
Ventura County (SMSA) 1971 - 1975

OCCUPATIONAL CATEGORY	TOTAL	Division "B" MINING	Division "C" CONST.	Division "D" MFG	Division "E" T.C. & U.	Division "F" TRADE	Division "G" F.I.R.E.	Division "H" SERVICE	Division "I" GOV'T
	INDUSTRY DIVISION								
TOTAL	23014	-659	720	1964	600	5820	1140	5148	8281
Prof-Tech.	4964	- 74	52	29	39	74	90	1971	2841
Mgr.	2572	- 65	81	181	47	1100	337	309	582
Clerical	5238	- 69	44	225	144	966	503	908	2517
Sales	1714	- 3	3	90	7	1408	163	37	9
Craftsmen	1724	-161	353	172	129	458	10	264	499
Operative	2122	-274	85	1162	162	594	5	166	222
Services	839	- 2	1	5	3	7	6	31	788
Laborers	724	--	100	124	53	211	1	46	189

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Table B-1

Projected Employment Change by Occupation and Industry
Ventura County (SMSA) 1971-1975

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Total	23014	-659	720	1964	600	5820	1140	5148	8281
Professional, technical, kindred	4964	-74	52	29	39	74	90	1971	2841
Engineers, technical	90	-23	19	-104	8	5		42	143
Engineers, aeronautical	-95			-115					20
Engineers, chemical	6	-1		5					2
Engineers, civil	50	-1	17	-8	2			2	38
Engineers, electrical	27	-1	1	-21	4			11	33
Engineers, industrial	5	-1		-6				4	8
Engineers, mechanical	15	-1	1	-8	1			4	18
Engineers, metallurg, etc.	22			-19				2	1
Engineers, mining	-8	-11		6				2	1
Other engineers, technical	79	-1	1	-38	1	5		12	23
Natural scientists	177	-14		21		1		68	101
Chemists	52	-1		20		1		18	14
Agricultural scientists	25			2				3	20
Biological scientists	40			2				19	19
Geologists, geophysicists	-4	-12		1				2	5
Mathematicians	10			8				8	10
Physicists	30							10	20
Other natural scientists	20			1				7	12
Technicians, ex. med., dental	298	-18	21	38	9	6		55	187
Draftsmen	39	-5	5	17	1	2		7	12
Surveyors	19	-1	4		1			1	14
Air traffic controllers	17								17
Radio Operators	14				1				13
Technicians, other	206	-10	12	20	6	4		46	128

Table B-1

Projected Employment Change by Occupation and Industry
Ventura County (SMSA) 1971-1975
- 2 -

BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Medical, other health wkrs	962			4		1		900	57
Dentists	56							55	1
Dietitians, nutritionists	16							13	3
Nurses, professional	386			1		1		366	18
Optometrists	9							9	
Osteopaths	7							7	
Pharmacists	6							5	1
Physicians & surgeons	171							164	7
Psychologists	27							13	14
Technicians, med., dental	180			3				172	5
Veterinarians	5								5
Other medical, health wkrs	99							95	4
Teachers	1787					5		279	1508
Teachers, elementary	725							111	614
Teachers, secondary	648							98	550
Teachers, college	268							40	228
Teachers, other	145							29	116
Social scientists	40			-2	1	2	4	10	25
Economists	15						3	2	10
Statisticians & actuaries	11			-2		1	1	3	8
Other social scientists	9							2	7
Other prof., tech. & kindred	1611	-14	11	15	21	52	84	619	823
Accountants & auditors	139	-8	3	14	5	17	20	16	72
Airplane pilots, navigators	6			-1	4				3
Architects	3							2	1
Wkrs in arts, entertainment	447			-13	1	11		243	205
Clergymen	106							104	2
Designers, exc. design draft.	19		1	7		1		10	
Editors & reporters	30			9	1	3	1	10	6
Lawyers & judges	56						2	19	35
Librarians	75						1	17	57

Table B-1

Projected Employment Change by Occupation and Industry
Ventura County (SMSA) 1971-1975
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BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Personnel & lab. rel. wkrs	55			7	1	8	2	9	28
Photographers	14			1				8	5
Social & welfare workers	129							30	99
Prof., tech., kindred, n.e.c.	538	-2	6	-5	9	10	58	150	312
Managers, officials, proprietors	2572	-65	81	181	47	1100	337	309	582
Conductors, railroad	5				5				
Creditmen	25			1		16	6	2	
Officers, pilots, engrs. ship	3				3				
Postmasters & assistants	44								44
Purchasing agents	26	-1		1	1	5	2	4	14
Managers, office, prop., n.e.c.	2468	-62	81	177	39	1077	330	302	524
Clerical & kindred workers	5238	-69	44	225	144	966	503	908	2517
Stenos, typists, secretaries	1287	-25	13	61	19	106	130	365	618
Office machine operators	200	-2	1	24		49	54	23	44
Other clerical, kindred wkrs	3754	-40	30	138	118	812	319	520	1857
Accounting clerks	144	-2	5	16	5	37	11	16	56
Bookkeepers, hand	148	-4	6	15	2	32	55	36	6
Bank tellers	143					74	69		
Cashiers	120			1	5	50	23	23	18
Mail carriers	575					205			370
Postal clerks	434								434
Shipping, receiv. clerks	81			43	1	30	1	2	4
Telephone operators	107			4	28	16	12	25	22
Clerical & kindred, n.e.c.	2010	-30	19	67	77	364	148	418	947
Sales workers	1714	-3	3	90	7	1408	163	37	9
Craftsmen, foremen & kindred	1724	-161	353	172	129	458	10	264	499
Construction craftsmen	470	-37	278	20	11	50		38	110
Carpenters	148	-2	86	9	1	23		11	20
Brickmasons & tile setters	33		25	1		5			2
Cement, concrete finishers	9		9						
Electricians	54	-8	26	-11	4	2		8	33

Table B-1

Projected Employment Change by Occupation and Industry
Ventura County (SMSA) 1971-1975
- 4 -

BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Excavating, grading mach. opr.	29	-22	34	1	1	1		4	10
Painters & paperhangers	89		41	3	1	5		14	25
Plasters	7		7						
Plumbers & pipefitters	81	-1	34	14	3	9		4	18
Roofers & slaters	10		8			2			
Structural metalworkers	12		8	4					
Foremen n.e.c.	231	-42	22	117	17	54	2	15	46
Metalworking crafts exc. mech.	98	-5	11	50	5	3		3	31
Machinists & related occ.	42	-2		29	3				12
Blksmiths, forgmn, hammersm.		-1		1					
Boilermakers	2		1	1					
Heat treaters, annealers									
Millwrights	18		1	17					
Molders, metal exc. coremakers	8			8					
Patternmakers, metal, wood	-5			-8					3
Rollers & roll hands	4			4					
Sheet metal workers	21		7	-2	1	2		1	12
Toolmakers & diemakers	1								1
Printing trades craftsmen	59			47		1	1	2	8
Compositors, typesetters	30			24		1	1		4
Electrotypers, sterotypes	1			1					
Engravers, exc. photoengr.	2			1					1
Photoengvrs, lithographers	8			7					1
Pressmen, plate printers	18			15				1	2
Transport. & pub. util. craft.	55		2	1	46				6
Linemen & servicemen	46		2	1	40				5
Locomotive engineers	5				5				
Locomotive firemen	1				1				
Mechanics & repairmen	732	-37	19	35	36	271	4	153	251
Airplane mech. & repairmen	-39			-87	6				48
Motor vehicle mechanics	234	-1	1	2	8	144		61	19
Office machine mechanics	14			1		9		3	1

Table 1

Projected Employment Change by Occupation and Industry
Ventura County (SMSA) 1971-1975
- 5 -

BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Radio & t.v. mechanics	34					10		11	13
RR & car mechanics	5			1	4				
Other mechanics & repair	472	-34	18	114	17	107	4	76	170
Other craftsmen & kindred	255	-34	20	82	14	76	2	50	45
Bakers	35			17		11		2	5
Cabinetmakers	16		1	4		9		1	1
Crane, derrick, hoist men	18	-5	4	14	1	3			1
Glaziers	10		2			8			
Jewelers & watchmakers	-3			-6		3			
Loom fixers									
Opticians, lens grinders	12			9		1		2	
Inspectors, log & lumber	3			1		2			
Inspectors, other	20	-1	4	1	6	2	1	7	
Upholsterers	8			-2		3		5	2
Craftsmen & kindred n.e.c.	134	-26	9	45	6	36	1	29	34
Operatives & kindred workers	2122	-274	85	1162	162	594	5	166	222
Drivers & deliverymen	561	-40	33	132	122	188	1	22	103
Drivers, bus, truck, tractor	392	-39	33	63	106	116	1	17	95
Deliverymen & routemen	165			69	15	71		3	7
Transp. & pub. util. oprs.	17				16				1
Brakemen & switchmen, RR	12				12				
Power station operators	3				2				1
Sailors & deckhands	3				2				1
Semiskilled metal working occ.	63	-10	7	42	2	6		8	6
Furnacemen, smeltermen, pour.	6			6					
Heaters, metal	1			1					
Welders & flame cutters	67	-10	9	46	2	6		8	6
Assemblers, mtlwkrs, class A	5			5					
Assemblers, mtlwkrs, class B	-21			-21					
Inspectors, mtlwkrs, class B	-9			-9					
Machine tool opr., class B	5			5					
Electroplaters	3			3					
Electroplaters, helpers	5			5					

Table B-1

Projected Employment Change by Occupation and Industry
Ventura County (SMSA) 1971-1975
- 6 -

BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E	Service	Gov't
Semiskilled textile occup.	104			104					
Knitters, loopers, toppers									
Spinners, textile									
Weavers, textile									
Sewers & stitchers, mfg.	104			104					
Other operatives & kindred	1382	-222	43	891	23	399	3	133	112
Asbestos, insulation wkrs.	2		2						
Attend. auto service parking	145					138		6	1
Blasters & powdermen	-2	-2							
Laundry, dry cleaning opr.	42							36	6
Meat cutters, exc. meat pckng	59					56		1	2
Mine operative laborers, n.e.c.	-205	-205							
Operatives & kindred, n.e.c.	1334	-13	40	888	22	204	3	88	102
Service Workers	3992	-8	4	39	18	1010	31	1472	1426
Private household workers									
Protective service workers	839	-2	1	5	3	7	6	31	788
Firemen	247			-1					248
Guards, watchmen, doorkprs	145	-2	1	7	2	6	6	27	98
Police, oth. law enforce. off.	447				1	1		2	443
Food service workers	1070			3	2	727	1	146	191
Bartenders	88					81		7	
Cooks, exc. priv. households	372			1	1	193		68	109
Counter & fountain wkrs	136			1		65		19	51
Waiters & waitresses	468			1	1	386		51	29
Other service workers	2057	-4	3	31	13	276	24	1266	448
Airline stewards, stwdss	4				4				
Attendants, hosp, other inst.	484							477	7
Charwomen & cleaners	107		1	3	1	18	5	54	25
Janitors & sextons	390	-2	1	15	3	23	13	135	202
Nurses, practical	196							194	2
Service workers, n.e.c.	879	-1	1	9	6	236	6	409	213
Laborers, except farm & mine	724		100	124	53	211	1	46	189

Industry Divisions classified by the Standard Industrial Classification (SIC) Codes (Appendix D)
Occupation Groups classified by the U.S.Bureau of Labor Statistics (BLS) Occupational Titles (Appendix B)

Summary Total Projected Employment by Occupation and Industry
Ventura County (SMSA) 1975

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OCCUPATIONAL CATEGORY	INDUSTRY DIVISION								
	TOTAL	Division "B" MINING	Division "C" CONST	Division "D" MFG	Division "E" T.C. & U.	Division "F" TRADE	Division "G" F.I.R.E.	Division "H" SERVICE	Division "I" GOV'T
TOTAL	115337	1018	5124	16316	4640	27177	4528	20386	36466
Prof-Tech	22968	115	369	2283	305	337	329	6835	12395
Mgr	12779	101	578	1015	367	5342	1361	1420	2601
Clerical	25626	108	310	2134	1112	4383	2070	3506	12003
Sales	7327	6	19	564	54	5894	568	178	44
Craftsmen	12446	249	2509	2700	995	2322	41	1298	2332
Operative	13768	425	604	6548	1255	3208	18	762	948
Services	16761	14	27	307	138	4667	135	6152	5321
Laborers	3656	--	709	445	413	1024	6	230	819

Table C-I

Total Projected Employment by Occupation and Industry
Ventura County (SMSA) 1975

BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Total	115337	1018	5124	16316	4640	27177	4528	20386	36466
Professional, technical, kindred	22968	115	369	2283	305	337	329	6835	12395
Engineers, technical	1958	38	137	877	63	37	0	168	638
Engineers, aeronautical	183			80				7	96
Engineers, chemical	58	3	1	35				8	11
Engineers, civil	303	3	122	15	12			9	142
Engineers, electrical	504	2	4	254	34	2		48	160
Engineers, industrial	200	4	1	139	3	1		20	32
Engineers, mechanical	283	3	5	161	6	3		21	84
Engineers, metallurg, etc.	47	1		36				7	3
Engineers, mining	22	19							3
Other engineers, technical	354	3	4	158	6	27		47	109
Natural scientists	905	24	2	151	3	5	1	224	495
Chemists	223	2	1	83	2	1		65	69
Agricultural scientists	125			8				11	106
Biological scientists	161			7				58	96
Geologists, geophysicists	66	21	1	3				10	31
Mathematicians	102		1	20		3	1	26	51
Physicists	140			21				32	87
Other natural scientists	87			9				23	55
Technicians, ex. med., dental	2000	29	152	627	67	46	1	207	871
Draftsmen	323	9	37	172	11	10		33	51
Surveyors	96	3	27		4	1		4	57
Air traffic controllers	84								84
Radio Operators	66	1	1	1	8			1	54
Technicians, other	1426	17	87	451	44	33		169	625

Table

Total Projected Employment by Occupation and Industry
Ventura County (SMSA) 1975
- 2 -

BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Medical, other health wkrs	3021	1		21	2	8	1	2723	265
Dentists	172							167	5
Dietitians, nutritionists	57					3		41	13
Nurses, professional	1197			9	2	2	1	1106	77
Optometrists	27							27	
Osteopaths	22							22	
Pharmacists	25			1		2		16	6
Physicians & surgeons	526							491	35
Psychologists	101							42	59
Technicians, med., dental	551			7				516	28
Veterinarians	26							1	25
Other medical, health wkrs	316	1		4				292	19
Teachers	6977			3	2	23	2	891	6056
Teachers, elementary	2804							350	2454
Teachers, secondary	2509							308	2201
Teachers, college	1035							124	911
Teachers, other	631			3	2	23		110	493
Social scientists	202	1	1	9	4	7	15	34	131
Economists	79			2	1	3	10	10	53
Statisticians & actuaries	79		1	6	3	3	5	14	47
Other social scientists	41			1				7	33
Other prof., tech. & kindred	7904	23	79	582	162	178	307	2586	3935
Accountants & auditors	809	14	19	119	36	51	81	64	425
Airplane pilots, navigators	62	1	1	2	34	1		3	20
Architects	19		2					8	9
Wkrs in arts, entertainment	1796		1	54	6	52	1	854	828
Clergymen	571							564	7
Designers, exc. design draft.	104		7	43	1	14		36	3
Editors & reporters	157			64	5	9	4	41	34
Lawyers & judges	345	2	2	4	2	3	5	140	187
Librarians	289			2			2	51	234

Table C-1

Total Projected Employment by Occupation and Industry
Ventura County (SMSA) 1975
- 3 -

BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Personnel & lab. rel. wkrs	390	2	3	48	9	32	8	36	252
Photographers	80			16	1	1		37	25
Social & welfare workers	578							130	448
Prof., tech., kindred, n.e.c.	2690	4	44	230	68	53	206	622	1463
Managers, officials, proprietors	12779	101	578	1015	367	5342	1361	1420	2601
Conductors, railroad	39				38				1
Creditmen	118			12	1	70	27	8	
Officers, pilots, engrs. ship	29	1	2		24			1	1
Postmasters & assistants	214								214
Purchasing agents	226	3	2	87	4	35	7	21	67
Managers, office, prop., n.e.c.	12165	97	575	921	301	5239	1326	1390	2318
Clerical & kindred workers	25626	108	310	2134	1112	4383	2070	3506	12003
Stenos, typists, secretaries	6261	40	92	619	150	550	513	1458	2839
Office machine operators	1029	5	4	146	53	236	219	88	269
Other clerical, kindred wkrs	18334	63	214	1367	910	3600	1337	1959	8894
Accounting clerks	708	5	35	72	36	188	41	64	267
Bookkeepers, hand	1104	7	43	81	15	529	243	161	25
Bank tellers	335						335		
Cashiers	1399		1	7	36	1103	93	87	72
Mail carriers	1810								1810
Postal clerks	2123								2123
Shipping, receiv. clerks	373	2	1	171	11	148	5	13	22
Telephone operators	544	1	2	25	217	65	46	92	96
Clerical & kindred, n.e.c.	9943	48	133	1010	595	1564	573	1539	4481
Sales workers	7327	6	19	564	54	5894	568	178	44
Craftsmen, foremen & kindred	12446	249	2509	2700	995	2322	41	1296	2332
Construction craftsmen	3196	59	1980	236	84	179	2	172	496
Carpenters	881	4	609	40	9	80	1	47	91
Brickmasons & tile setters	213	1	178	5		18		2	9
Cement, concrete finishers	68		67			1			
Electricians	539	14	165	107	35	13		35	150

Table

Total Projected Employment by Occupation and Industry
Ventura County (SMSA) 1975
- 4 -

BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov
Excavating, grading mach. opr.	350	35	244	5	9	5		10	4
Painters & paperhangers	503	1	293	12	7	25		58	10
Plasters	56		51					2	
Plumbers & pipefitters	451	4	239	54	22	30		15	8
Roofers & slaters	67		57			7			
Structural metalworkers	68		57	9	1				
Foremen n.e.c.	1679	66	160	761	131	259	4	67	22
Metalworking crafts exc. mech.	1036	9	75	717	39	11		19	14
Machinists & related occ.	449	5	3	353	26			3	5
Blksmiths, forgmn, hammersm.	15	2	2	4	1			4	
Boilermakers	14		7	4	2				
Heat treaters, annealers	11			10					
Millwrights	62	1	10	48		1		1	
Molders, metal exc. coremakers	23			23					
Patternmakers, metal, wood	48			33				2	1
Rollers & roll hands	10			10					
Sheet metal workers	248		53	112	7	6		6	6
Toolmakers & diemakers	156			150					
Printing trades craftsmen	293			238	1	10	4	10	4
Compositors, typesetters	141			108		6	4	5	1
Electrotypers, sterotypes	3			3					
Engravers, exc. photoengr.	14			10	1				
Photoengvrs, lithographers	43			39					
Pressmen, plate printers	92			72		3		5	1
Transport. & pub. util. craft.	421	2	17	19	353		1	3	2
Linemen & servicemen	373		17	19	308		1	3	2
Locomotive engineers	42	2			39				
Locomotive firemen	6				6				
Mechanics & repairmen	4543	58	136	619	281	1476	19	800	115
Airplane mech. & repairmen	365			61	46	5		3	25
Motor vehicle mechanics	508	3	7	14	65	5		326	8
Office machine mechanics	902			4		873	1	19	

Table C-1

Total Projected Employment by Occupation and Industry
Ventura County (SMSA) 1975
- 5 -

BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E.	Service	Gov't
Radio & t.v. mechanics	255		1	11	3	79		89	72
RR & car mechanics	37			3	33				1
Other mechanics & repair	2424	55	128	523	131	469	18	361	739
Other craftsmen & kindred	1558	55	141	389	109	389	9	236	238
Bakers	157			75		49		12	21
Cabinetmakers	75		7	13		39		8	8
Crane, derrick, hoist men	109	9	28	39	9	14		2	8
Glaziers	42		11	3		27		1	
Jewelers & watchmakers	38			6		21		11	
Loom fixers									
Opticians, lens grinders	43			22		15		5	1
Inspectors, log & lumber	9			2		6		1	
Inspectors, other	125	3	29	4	49	11	2	27	
Upholsterers	65		1	4		19		32	9
Craftsmen & kindred n.e.c.	883	42	65	209	49	186	7	133	192
Operatives & kindred workers	13768	425	604	6548	1255	3208	18	762	948
Drivers & deliverymen	3374	63	236	608	941	1009	5	105	407
Drivers, bus, truck, tractor	2467	61	233	286	821	601	3	82	380
Deliverymen & routemen	910	1	3	323	119	411	1	24	28
Transp. & pub. util. oprs.	141	1	3	7	120	1		1	8
Brakemen & switchmen, RR	92			2	90				
Power station operators	22		1	4	12			1	4
Sailors & deckhands	27	1	3		18	1			4
Semiskilled metal working occ.	1511	17	61	1291	18	34		56	34
Furnacemen, smeltermen, pour.	16	1		15					
Heaters, metal	2			2					
Welders & flame cutters	471	16	61	253	17	34		56	34
Assemblers, mtlwkrs, class A	172			172					
Assemblers, mtlwkrs, class B	468			468					
Inspectors, mtlwkrs, class B	186			186					
Machine tool opr., class B	163			163					
Electroplaters	12			12					
Electroplaters, helpers	17			17					

Table C-1

Total Projected Employment by Occupation and Industry
Ventura County (SMSA) 1975
- 6 -

BEST COPY AVAILABLE

	Total All Ind.	Mining	Const.	Mfg.	T.C.&U.	Trade	F.I.R.E	Service	Gov't
Semiskilled textile occup.	393			392		1			
Knitters, loopers, toppers									
Spinners, textile	1			1					
Weavers, textile									
Sewers & stitchers, mfg.	391			391					
Other operatives & kindred	8350	344	303	4253	176	2161	13	601	499
Asbestos, insulation wkrs.	25		16	5		2			2
Attend. auto service parking	895		1	1	1	845	2	40	5
Blasters & powdermen	6	4	2						
Laundry, dry cleaning opr.	158			2		3		124	29
Meat cutters, exc. meat pckng	294			1	2	274		6	11
Mine operative laborers, n.e.c.	318	318							
Operatives & kindred, n.e.c.	6651	22	285	4241	173	1036	10	429	455
Service Workers	16761	14	27	307	138	4667	135	6152	5321
Private household workers									
Protective service workers	2986	4	5	72	22	29	27	140	2687
Firemen	731			2				4	725
Guards, watchmen, doorkprs	755	4	5	67	13	25	27	123	491
Police, oth. law enforce. off.	1496			3	8	3		10	1472
Food service workers	4830	2	2	18	13	3390	4	626	775
Bartenders	429					391		38	
Cooks, exc. priv. households	1633	1	1	6	7	907	1	267	443
Counter & fountain wkrs	577		1	6	1	293	1	66	209
Waiters & waitresses	2187		1	3	5	1799	1	254	124
Other service workers	8906	8	20	182	103	1247	105	5382	1859
Airline stewards, stwdss	27				27				
Attendants, hosp, other inst.	1508							1466	42
Charwomen & cleaners	479	1	5	18	9	87	23	236	100
Janitors & sextons	1707	4	9	86	24	104	53	601	826
Nurses, practical	608							597	11
Service workers, n.e.c.	4564	3	7	63	43	1055	29	2482	882
Laborers, except farm & mine	3656		709	445	413	1024	6	230	819

Industry Divisions classified by the Standard Industrial Classification (SIC) Codes (Appendix D)
Occupation Groups classified by the U.S.Bureau of Labor Statistics (BLS) Occupational Titles (Appendix B

APPENDIX G

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APPENDIX H

EMPLOYER VALIDATION SURVEY FORMS

1. Public and Human Service
2. Air Transportation

VENTURA COUNTY SUPERINTENDENT OF SCHOOLS
VENTURA COUNTY COMMUNITY COLLEGE DISTRICT
MANPOWER PROJECTION MODEL PROJECT

SURVEY OF PUBLIC AND HUMAN SERVICE OPPORTUNITIES

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Your Type of Organization

- ☐ FEDERAL
- ☐ STATE
- ☐ LOCAL
- ☐ NON-PROFIT
- ☐ PRIVATE

Telephone No. _____

Person Preparing Report: _____

Title: _____

Office Address: _____

The purpose of this study is to identify employment opportunities in the public service and human service occupational cluster. This occupational cluster involves employees who dispense your organizational services on a person to person basis to the general public or to individual clients. Public and or human service help is typically identified in the form of crisis and personal counseling, and assistance in obtaining employment, health and educational services.

1. a. The primary goal of your organization is: _____

b. The most important services your organization provides are: _____

2. Estimated total number of paid employees:

			Full Time 35 Hrs/Wk	Part Time Less Than 35 Hrs/Wk
a.	past/present	January 1, 1970	_____	_____
		January 1, 1971	_____	_____
		January 1, 1972	_____	_____
b.	anticipated	January 1, 1973	_____	_____
		January 1, 1974	_____	_____
		January 1, 1975	_____	_____

3. Most employee's salary/wage is computed by the:

☐ Hour ☐ Week ☐ Month ☐ Year

VENTURA COUNTY SUPERINTENDENT OF SCHOOLS
VENTURA COUNTY COMMUNITY COLLEGE DISTRICT
MANPOWER PROJECTION MODEL PROJECT

4. What is your organization's primary source(s) for new employees?

☐ Civil Service System ☐ Drop-in Candidates ☐ School/College
☐ Newspaper/Radio ☐ State Employment Service ☐ Other _____
☐ Word of mouth ☐ Private Employment Service

5. What are your primary (most frequent) positions? Please list job titles and starting salaries as indicated:

a. Current Positions:

Primary Position Title for each Job Series (3 or more in same position)	What is the Education Level Expected At Time of Employment or Advancement	Estimated number of Full Time Employees on: 1/1/72	1/1/73	1/1/74	1/1/75	Approximate Range of Starting Salary
_____	_____	____	____	____	____	_____
_____	_____	____	____	____	____	_____
_____	_____	____	____	____	____	_____
_____	_____	____	____	____	____	_____
_____	_____	____	____	____	____	_____

b. Anticipated Positions:

_____	_____	XXX	____	____	____	_____
_____	_____	XXX	____	____	____	_____

6. Does your organization conduct a formal in-service training program? ☐ Yes ☐ No
Does your organization encourage your employees for post-secondary education? ☐ Yes ☐ No
(If answer is yes on either question, please provide brief details or enclose appropriate information copies.)

_____

_____

_____

7. For further data, may we contact you or one of your staff for a personal interview? ☐ Yes ☐ No

8. COMMENTS: _____

_____

_____

THANK YOU FOR YOUR HELP!

VENTURA COUNTY SUPERINTENDENT OF SCHOOLS
VENTURA COUNTY COMMUNITY COLLEGE DISTRICT
MANPOWER PROJECTION MODEL PROJECT

SURVEY OF OPPORTUNITIES IN THE FIELD OF AVIATION

Person Preparing Report: _____
Title: _____
Address: _____
Telephone No. ( ) _____
Area Code

1. A. Type of organization: (Please check the appropriate box.)

☐1. Federal Govt. ☐2. State Govt. ☐3. Local Govt. ☐4. Non-Profit ☐5. Private

B. Services provided by your organization. _____

2. Estimated total number of Full-Time and Part-Time employees regardless of position. (This estimate is not to be confused with the estimate requested in question No. 5.)

Full-Time 35 Hrs/Wk	Part-Time Less Than 35 Hrs/Wk	Past/Present
_____	_____	January 1, 1970
_____	_____	January 1, 1971
_____	_____	January 1, 1972
		Anticipated
_____	_____	January 1, 1973
_____	_____	January 1, 1974
_____	_____	January 1, 1975

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3. Most of your employee's salary/wage is computed by: (Please check one of the methods listed below.)

☐1. Hour ☐2. Week ☐3. Bi-weekly ☐4. Month ☐5. Annual ☐6. Other

4. What is your organization's primary source(s) for new employees?(Please check the appropriate box(es).

☐1. Civil Service System
☐2. Newspaper/Radio
☐3. Word-of-mouth
☐4. Drop-in Candidates
☐5. State Employment Service
6. Private Employment Service
☐7. School/College
☐8. Other

5. Please indicate from the list below which positions are most frequently used for employment by your organization and give the information for each position indicated. Part A is information pertaining to CURRENT positions in use and Part B pertains to ANTICIPATED new and developing positions, which have not previously been a part of your organization. If one of your job titles (position) is not listed, please include in space classified as "other". (Additional spaces are provided for clerical job titles and those jobs which provide a service to the customer.) EDUCATIONAL LEVEL REQUIRED WITHOUT PRIOR EXPERIENCE can be selected from the educational list below and indicated by number.

A. CURRENT POSITIONS

(D.O.T)[4]	AIR TRANSPORTATION OCCUPATIONS	Educational Level Required Without Prior Experience	Estimated No. Full-Time Employees for Each Position Indicated for the Year: 70	71	72	73	74	75	Starting Salary ($ Amt Per Hr)
(912.782)	Aircraft-Air-Conditioning-Truck Operator								
(621.281)	Aircraft-and-Engine Mechanic								
(621.384)	Aircraft-and-Engine Mechanic Helper								
(621.281)	Aircraft-Engine Assembler								
(621.281)	Aircraft-Engine Dismantler								
(621.281)	Aircraft-Engine Installer								
(219.388)	Aircraft-Log Clerk								
(196.283)	Airline Pilot								
(193.282)	Airline-Radio Operator								
(193.168)	Airline-Radio Operator, Chief								
(196.283)	Airplane Captain								
(919.887)	Airplane Checker								
(912.368)	Airplane-Dispatch Clerk								
(196.283)	Airplane First-Officer								
(621.281)	Airplane Inspector								
(196.283)	Airplane Pilot, Commercial								
(352.878)	Airplane Steward								
(352.878)	Airplane Stewardess								
(166.228)	Airplane Stewardess, Chief								
(219.368)	Airport Clerk								
(824.781)	Airport Electrician								
(899.137)	Airport-Maintenance Chief								
(912.384)	Airport Serviceman								
(919.887)	Cabin Service Agent								
(913.868)	Cabler								
(621.281)	Carburetor Man								
(912.368)	Cargo Agent								
(196.268)	Check Pilot								
(196.168)	Chief Pilot								
(196.283)	Co-Pilot								

(LIST OF EDUCATIONAL LEVEL)

1. Less than High School
2. High School Diploma
3. 1-2 years College
4. 3-4 years College
5. BS/BA Degree
6. Advanced Degree
7. Vocational Degree
8. Other - Specify education (exclude experience)

[4] DICTIONARY OF OCCUPATIONAL TITLES

CURRENT POSITIONS (con't) (D.O.T)	Educational Level Required Without Prior Experience	Estimated No. Full-Time Employees for Each Position Indicated for the Year: 70	71	72	73	74	75	Starting Salary ($ Amt Per Hr)
(196.283) Corporation Pilot								
(219.388) Crew Scheduler								
(219.138) Crew Scheduler, Chief								
(912.168) Dispatcher								
(911.883) Dock Hand								
(849.781) Dope-and-Fabric Man								
(829.131) Electrician Foreman, Airplane								
(825.381) Electrician, Airplane								
(621.281) Engine Tester								
(912.137) Equipment-Service Supervisor								
(373.884) Fire Fighter, Crash								
(219.388) Flight-Crew-Time Clerk								
(621.281) Flight Engineer								
(912.368) Flight-Information Expediter								
(166.228) Flight Steward, Chief								
(891.137) Foreman, Aircraft Cleaning								
(621.131) Foreman, Aircraft Maintenance								
(638.131) Fuel-System-Maintenance Foreman								
(630.781) Fuel-System-Maintenance Man								
(196.283) Helicopter Pilot								
(621.281) Hydraulic Tester								
(721.281) Ignition Specialist								
(196.228) Instructor, Pilot								
(710.281) Instrument Man								
(710.381) Instrument Man Helper								
(912.867) Laborer, Airport Maintenance								
(912.887) Lineman								
(912.887) Linewoman								
(219.388) Load-Control Agent								
(184.118) Manager, Operations								
(184.168) Manager, Station								
(184.168) Manager, Traffic								
(912.884) Master Rigger								
(196.188) Navigator								
(845.781) Painter, Aircraft								
(912.884) Parachute Rigger								
(255.258) Passenger-Traffic Agent								

(LIST OF EDUCATIONAL LEVEL)

1. Less than High School
2. High School Diploma
3. 1-2 years College
4. 3-4 years College
5. BS/BA Degree
6. Advanced Degree
7. Vocational Degree
8. Other - Specify education (exclude experience)

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CURRENT POSITIONS (con') (D.O.T)	Educational Level Required Without Prior Experience	Estimated No. Full-Time Employees for Each Position Indicated for the Year: 70	71	72	73	74	75	Starting Salary ($ Amt Per Hr)
(239.588) Plotting-Board Operator								
(357.878) Porter								
(823.281) Radio-and-Electrical Inspector								
(193.168) Radio Chief								
(823.281) Radio Mechanic, Aircraft Installations								
(912.368) Reservations Agent								
(912.168) Schedule Analyst								
(807.381) Skin Man								
(357.878) Sprayer								
(849.781) Spray Man								
(621.281) Supercharger Mechanic								
(184.118) Superintendent, Airport								
(184.168) Superintendent, Division								
(187.168) Superintendent, Maintenance								
(184.168) Superintendent, Stations								
(912.138) Supervisor, Ticket Sales								
(196.283) Test Pilot								
(912.488) Traffic-Rate Clerk)								
(912.368) Transportation Agent								
(196.283) Transport Pilot								
(912.388) Trip Follower								
(239.368) Weather Clerk								
Other:								
Clerical:								

B. ANTICIPATED POSITIONS
(New and Developing)

		XX	XX	XX				
		XX	XX	XX				
		XX	XX	XX				

(LIST OF EDUCATIONAL LEVEL)

1. Less than High School
2. High School Diploma
3. 1-2 years College
4. 3-4 years College
5. BS/BA Degree
6. Advanced Degree
7. Vocational Degree
8. Other - Specify education (exclude experience)

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6. ☐ Yes ☐ No A. Does your organization conduct a formal in-service training program? (If answer is "yes" please provide brief details.)

_____

_____

_____

☐ Yes ☐ No B. Does your organization reimburse your employees for additional education? (If answer is "yes" please provide brief details or enclose appropriate information copies.)

_____

_____

_____

7. ☐ Yes ☐ No For further data, may we contact you or one of your staff for a personal interview?

8. We would be very interested in your views on what you feel the probabilities are for the aviation field in 1980 and 1985, if you would care to comment at this time. Such information would not be used statistically, but would provide an interesting comparison with our final projections.

_____

_____

_____

_____

_____

_____

THANK YOU FOR YOUR HELP!

APPENDIX I

MANPOWER/OCCUPATIONAL RESOURCE CENTER

COLLECTION PRINT-OUTS

1. Child Care and Development Collection (Project HELP)
2. Manpower Collection

CHILD CARE AND DEVELOPMENT COLLECTION - AS OF JANUARY, 1972

LIST A - DETAIL LIST OF COLLECTION
LIST B - AUTHOR CROSS REFERENCE
LIST C - TITLE CROSS REFERENCE
LIST D - PUBLISHER CROSS REFERENCE

1	F19	AINSWORTH, NORMA, ED.	
2	F19	THE DISTANT PROMISE AND OTHER STORIES FOR YOUNG ADULTS.	
5	F19	SCHOLASTIC BOOK SERVICES	
6	F19	1960 PAPER	1
1	F20	AINSWORTH, NORMA RUEDI	
2	F20	LOOK FOR TOMORROW	
5	F20	NEW YORK, SCHOLASTIC BOOK SERVICE	
6	F20	1970 PAPER	1
1	F66	HEAD, GAY	
2	F66	FIRST LOVE	
5	F66	SCHOLASTIC BOOK SERVICE	
6	F66	1969 PAPR	
1	155.4103	BRECKENRIDGE, MARTIN E.	
2	155.4103	GROWTH AND DEVELOPMENT OF THE YOUNG CHILD	
5	155.4103	W. B. SAUNDERS COMPANY	
6	155.4103	1969 8TH EDITION	5
1	155.4295	FRAIBERG, SELMA	
2	155.4295	THE MAGIC YEARS UNDERSTANDING AND HANDLING THE PROBLEMS OF	
3	155.4295	EARLY CHILDHOOD.	
5	155.4295	CHARLES SCRIBNER'S SONS	
6	155.4295	1959	3
1	155.439	AXLINE, VIRGINIA M	
2	155.439	PLAY THERAPY.	
5	155.439	BALLANTINE BOOKS	
6	155.439	1969	3
1	155.4418	ILG, FRANCES L.	
2	155.4418	PARENTS ASK	
5	155.4418	HARPER AND ROW	
6	155.4418	1962	4
1	155.4560	MILLAR, SUSANNA	
2	155.4560	THE PSYCHOLOGY OF PLAY	
5	155.4560	PENGUIN BOOKS	
6	155.4560	1968 PAPER	2
1	155.4950	WICKES, FRANCES G.	
2	155.4950	THE INNER WORLD OF CHILDHOOD	
5	155.4950	SIGNET BOOKS	

MANPOWER COLLECTION

3	210	HOW OUR LAWS ARE MADE
5	210	CONGRESS
6	210	1971
1	474	PRESIDENT
1	474	COUNCIL OF ECONOMIC ADVISORS
2	474	REPORT OF THE ANNUAL
2	474	ECONOMIC REPORT OF THE PRESIDENT
5	474	GPO
6	474	1971
1	282	DOMESTIC COMMERCE BUR.
1	282	COMMERCE
2	282	US INDUSTRIAL OUTLOOK
3	282	1970
5	282	COMMERCE
6	282	1970
1	186	DOMESTIC COMMERCE BUREAU
1	186	COMMERCE
2	186	U.S. INDUSTRIAL OUTLOOK
3	186	1971
4	186	WITH PROJECTIONS THROUGH 1980
5	186	COMMERCE
6	186	1971
1	335	ECONOMIC OPPORTUNITY
1	335	PRESIDENT, EXEC, OFF. OF
2	335	MISC PUB
3	335	CATALOG OF FEDERAL DOMESTIC ASSIATANCE
4	335	UPDATE TO THE 1971 CATALOG
5	335	GPO
6	335	1971
1	207	FAA
1	207	TRANSPORTATION
2	207	AIRPORT MASTER PLANS
5	207	TRANS
6	207	1971
1	218	FEDERAL POWER COMMISION
2	218	RECREATION OPPORTUNITIES AT HYDROELECTRIC PROJECTS LICENSED
3	218	THE FEDERAL POWER COMMISION
5	218	GPO
6	218	1971
1	204	FEDERAL REGISTAR
1	204	NAT. ARCHIVES AND RECORDS SER.
1	204	GENERAL SERVICES ADMIN.
2	204	UNITED STATES GOVERNMENT ORGANIZATION MANUAL
2	204	1971-72
5	204	GSA
6	204	1971
1	475	HUD
2	475	HUD STATISTICAL YEARBOOK
3	475	1969
5	475	HUD
6	475	1969
1	351	BLS
1	351	LABOR
2	351	AREA WAGE SURVEY

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APPENDIX J

JOURNAL ARTICLES, NEWSLETTER

VENTURA COUNTY'S EARLY WARNING MATRICES FOR MANPOWER PROJECTION

by Miss Odessa Dubinsky - California State Department
of Human Resources Development

The importance of occupational labor-market information and its application in the planning and implementation of vocational and career guidance, job counseling, and job placement programs has been matched only by its inadequacy. In 1969 the United States Bureau of Labor Statistics (BLS) published "Tomorrow's Manpower Needs," based on an industry-occupational matrix using 1960 census data, which provided worker-need projections to 1975 for some 160 occupations. The matrix, which contains national figures and presents national trends, actually is a fairly simple grid chart with one axis showing industry divisions and the other giving occupational detail. In effect, the matrix shows on the vertical scale the occupational structure of industries by whatever level of detail is available and wanted, and at the same time provides sources of occupational concentration by reading across the occupational axis.

The national matrix was the first successful effort at developing both the data for the matrix and a methodology which could conceivably be adapted for use at other than the national level.

Early in 1972 a formal agreement was reached between the Manpower Administration and the Bureau of Labor Statistics to develop, in cooperation with State Employment Security agencies, an integrated national-state industry-occupation employment matrix incorporating 1970 Census of Population labor force data. The joint agreement recognizes the essential and urgent requirements for projection capability at the local level. The first step will be the undertaking by BLS, in conjunction with the other

signatories, of a three-year program which will include a series of 51-state matrices, including the District of Columbia, "consistent in format, content, coding structure, employment concepts, etc., with the national matrix." The project also will design and develop a flexible multi-purpose computer system to use fully these state matrices in operational and research programs.

The sticker here is the time element. It will be at least 1975 before the guide-lines, programs, and detailed census data are made available so that the states can begin their part of the program. Probably an even longer time will elapse before data are made available at the local level where the needs are greatest. Decentralization and proliferation of manpower programs have intensified the demands for information at the community level, exactly where resources for amassing, analyzing, and compiling such data are least likely to be available.

Augmenting the growing requirements of manpower agencies for adequate and accurate current and forecast information an occupational structure and trends was the demand for data essential to the stipulations of the Vocational Education Act of 1963 which requires schools everywhere to conduct "programs...in areas of proven occupational needs." More recently U. S. Commissioner of Education Sidney Marland has emphasized the precept of providing all young people with a salable work capability upon leaving school, which, of course, requires knowledge of available and potential jobs of the job market.

To meet these demands somewhat in advance of the too long lead-time promised by the federal program, several groups in Southern California joined together in a project which could be used to produce valid, useful, and comprehensive local labor-market information on an interim basis which would bridge the gap until the federal system is ready. Working with funding

from a VEA: Part C from the California State Department of Education the participating agencies, which include Ventura County Superintendent of Schools, the Ventura County Community Colleges, the California State Departments of Education and Human Resources Development, Claremont Graduate Schools, and the U. S. Department of Labor Statistics, embarked on Phase I in mid-1971.

By May 1972, the first output was presented at a symposium of educators, vocational guidance administrators and planners, manpower agency representatives, and other interested parties. The "piece de resistance" was an "Early Warning Matrix" for Ventura County itself.

The Ventura County matrix, while only a first approximation or prototype of what will ultimately be produced, provides base employment data for the county by occupation and industry with projections of net increases and decreases by occupation to 1975. Sufficient detail was produced to use for instructional purposes and to outline to the seminar participants the potential of the matrix data.

The goals of this project and the Phase II follow-on, which will be running through fiscal 1973, are (1) to provide the necessary input for the matrix and deliver from it the expansion needs and replacement needs information so urgently needed; (2) to provide orientation and training in the understanding, utilization, and application of the outputs of the program; and (3) to develop new and improved processes for continuing, updating, and expanding the program. The system is expected to be completely and easily transportable to any county or standard metropolitan statistical area for which detailed industrial employment-trend data are maintained. Perhaps the last two goals of the project should be underlined and emphasized.

For the past fifteen years dozens of "manpower needs" surveys have been compiled and published. Thousands of dollars and man-hours have been expended to put one more volume of statistics on a dusty shelf or into unaccessible archives. School teachers, guidance counselors, vocational education administrators and planners, placement interviewers rarely if ever understood the data nor were helped to apply the information to their own uses and needs. The Manpower Projection Model has as an integral component the holding of seminars, symposiums, and specialized training courses whereby the ultimate users are led through the complexities of the Matrix maze to an understanding of its content and to a capability of using the data in planning and implementing vocational education and preparation programs.

During the 1972-73 winter and spring months, some 150 individuals will be invited to attend such seminars at various centers in Southern California. Lectures, visual aids, video-tape materials, and group workshops will be afforded. Follow-up of the training, to evaluate the efficacy of both course content and the matrix, is scheduled for late spring.

The objective of developing new and improved methodologies for continuing the program and allowing for constant and regular updating and validation of the occupational trend data is no less important than the foregoing. It has been the unfortunate history of the manpower-survey program that the survey methodologies used heretofore were so costly in time and personnel and dollars and so cumbersome that there were few if any attempts to update or improve the information. The local Manpower Projection Model has such capabilities inbuilt. Future procedures will utilize such resources as data on occupations from the

Occupational Employment Statistics program of the Bureau of Labor Statistics, local employer surveys, national and local industrial-trend information and special occupational surveys, among others, in order to verify, update, and supplement the local matrix figures.

By mid-1973, it is expected that local data industry-occupational matrices with accompanying projections to 1980 and 1985 will be available for six standard Metropolitan Statistical Areas in Southern California and may be among the first of their kind on this level in the United States.

SEPTEMBER 1972

AMERICAN VOCATIONAL JOURNAL

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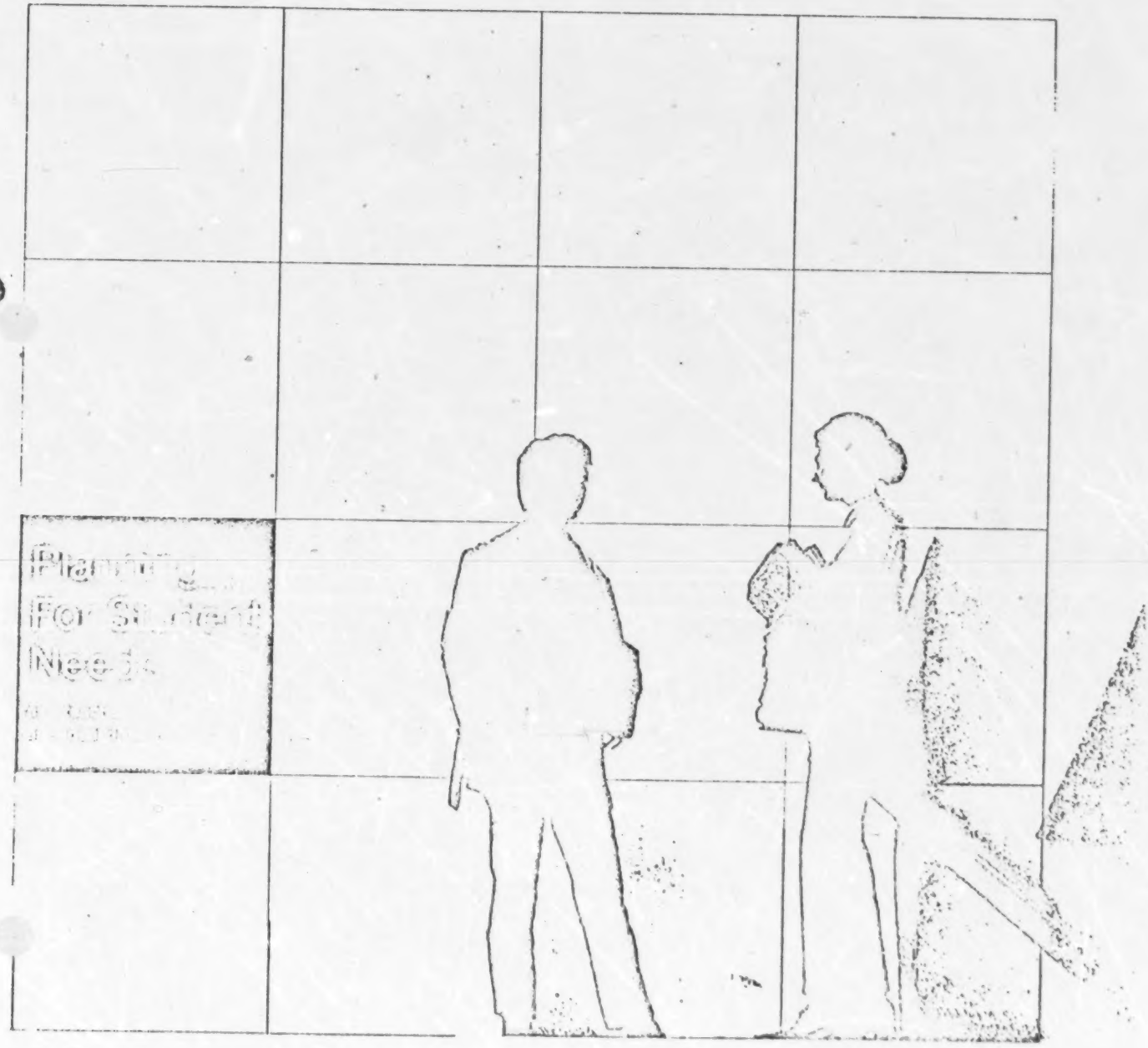

Early Warning Signals for Program Planning

Ventura County goes new route in manpower planning

JOHN L. VAN ZANT &
WILLIAM H. LAWSON

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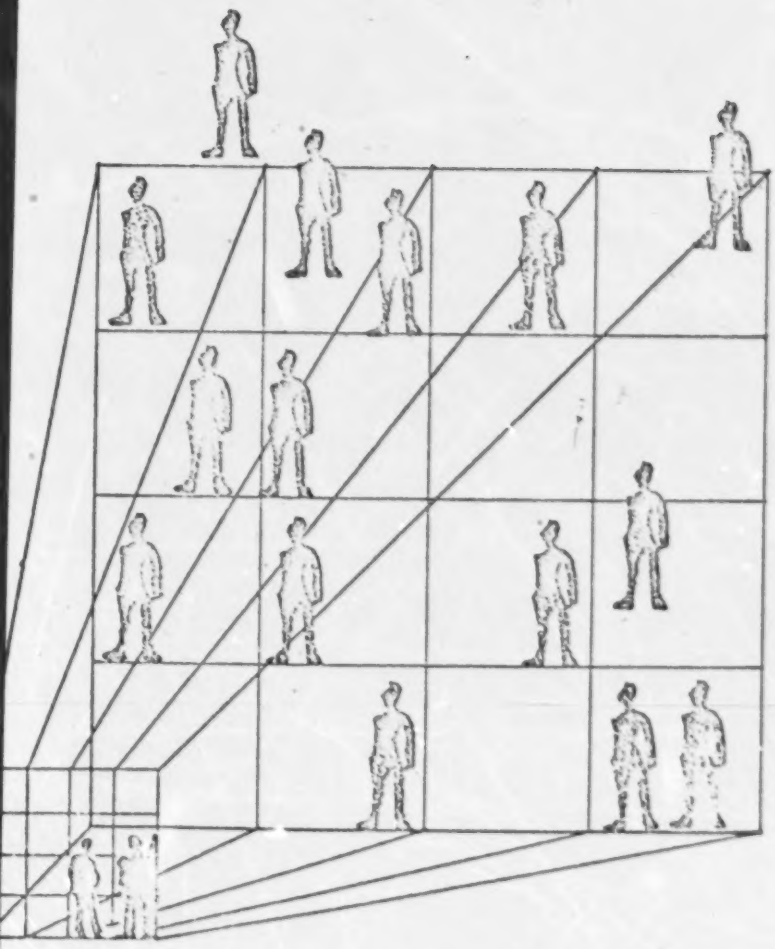

Ventura County, California, has improved its manpower projections for 1975 through a team effort. Cooperating in Phase I of the Manpower Projection Model System project were the Ventura County Superintendent of Schools, the Ventura County Community College District, the local office of the State Employment Service, the California State Department of Education, and the U.S. Bureau of Labor Statistics.

The project was funded by a VEA-Part C grant from the California State Department of Education. Phase I succeeded in producing Early Warning Industry-Occupational Matrices for use in making manpower projections in 1975.

Local vocational educators have long felt the need for more detailed manpower projections. Labor market and area planning information is included in the required annual Vocational Education District plans for the high schools, the county office, and the community college. The Ventura County Manpower Area Planning Council is constantly handicapped by lack of manpower projections.

The goal of the MPM System was to develop an improved system of projecting manpower needs in the near future (1975) that would provide information needed for curriculum development, staffing, facilities planning, occupational guidance, and area planning. Phase I was particularly concerned with developing methodology and practical linkages to the national and state manpower projections prepared by BLS and the State Employment Service.

The BLS office in Washington, D.C., maintains the national Industry-Occupational Matrices currently used in making projections for 1975, 1980 and 1985. For example, it

annually publishes the very useful *Occupational Outlook Handbook*.

An I-O Matrix is nothing more than a chart with one axis listing industry groups and the other listing occupational groups. Because most employment data are collected by industry, and not by occupation, employers are asked to give only the number of employees on their payrolls. Therefore most of the available manpower data are by industry. That is why the I-O Matrix concept is important—it provides a way of translating industry data based on ratio analysis into occupational data.

For example, if 20 percent of all employees in a given firm are in clerical jobs, there should be 20 new clerical employees for every 100 new employees hired. This is the basis for the I-O Matrix projection. It was empirically proved to be a valid basis for projection by BLS analyses of the 1950 and 1960 census information. For 1975, 120 industry groups and 160 occupational groups are listed.

Phase I of the project succeeded in linking the BLS National Matrix to the local level through SMSA employment data for the Ventura County Standard Metropolitan Statistical Area. These local employment data were fed into the National Matrix by using the national occupational ratios from the National I-O Matrix. The assumption is that these national ratios follow occupational trends.

In order to gain detailed information and verify local compatibility to national ratios, Phase I initiated an employer validation component and followed up with a questionnaire-telephone survey. Local employers were asked to provide information on their full-time and part-time employees for the past three years and to forecast for the next three.

Employer X, for example, was

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Figure 1

PROJECTED EMPLOYMENT BY OCCUPATION AND INDUSTRY
VENTURA COUNTY, 1971-75 (SAMPLE SECTION)

Industry Divisions*

	TOTAL ALL IND.	MINING	CONST.	MFG.	T.C.&U.	TRADE	FIRE	SERVICE	GOV'T
TOTAL	23014	659	720	1964	600	5820	1140	5148	8281
Professional technical, Kindred	4964	74	52	29	39	74	90	1971	2841
Engineers, technical	90	23	19	104	8	5		42	143
Engineers, Aeronautical	95			115					20
Engineers, Chemical	6	1		5					2
Engineers, Civil	50	1	17	8	2			2	38
Engineers, Electrical	27	1	1	21	4			11	33
Engineers, Industrial	5	1		6				4	8
Engineers, Mechanical	15	1	1	8	1			4	18
Engineers, Metallurg, Etc	22			19				2	1
Engineers, Mining	8	11						2	1
Other Engineers, Technical	79	1	1	38	1	6		12	23
Natural Scientists	177	14		21		1		66	101
Chemists	52	1		20		1		18	14
Agricultural Scientists	25			2				3	20
Biological Scientists	40			2				19	19

*Mining
Construction
Manufacturing
Transportation, Communication and Utilities
Wholesale and Retail Trade
Finance, Insurance and Real Estate
Service
Government

Figure 2

MANPOWER PROJECTION MODEL SYSTEM: PHASE I
Construction Industry Group Summary
Net Change, 1971-75

	Santa Barbara	San Diego	Anaheim	San Bernardino	Los Angeles	Ventura
Projected Industry Employment	419	7200	3000	1199	8399	720

Total Industry Employment 983

Both authors are directly involved in the project reported here. John Van Zant is director of occupational education, Ventura County, California, and Dr. Lawson, a labor economist, is administrative assistant to the superintendent of Ventura County Community College District.

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asked how many full-time and part-time employees he had on the payroll at a given time and how many were secretaries, engineers, etc. The occupational and industry employment data were plotted on a graph, and through extrapolation techniques were projected to 1975. The results were compared with the employer's own forecast for 1975 and with the projection provided by the I-O Matrices. As a final check, local judgment was applied.

The four different projection techniques resulted in a modification of a particular column and row intersection on the 1975 I-O Matrices. The point that should be stressed is that more than one projection technique is required. The I-O Matrix should not be relied upon as the sole projection technique. It does however provide the framework for incorporating other projection techniques.

Early Warnings for Ventura

Phase I resulted in three Early Warning I-O Matrices for 1971 and 1975 and net change for 1971-75 (see Figure 1). The Early Warning Matrices are so called because they are a first approximation of what Ventura County SMSA can anticipate if they follow national trends in the industries and occupations involved.

They are precise enough to indicate net increase and decrease, but not as precise as the specific numbers shown. In the construction column in Figure 1, for example, there is little probability that there will be exactly 17 more civil engineers in Ventura County by 1975. There might be 12 or there might be 25. What is fairly certain is that there will be a net increase.

Figure 2 shows only the construction column summary in the 1971-75 I-O Matrix for the Ventura County SMSA and five other Southern California SMSAs. An analysis of this summary indicates that there will be a slight net increase in employment in Ventura County and a considerable net decrease in the Los Angeles and San Bernardino/Riverside SMSAs. The magnitude of this decrease is about the same as the overall increase in the six SMSAs.

Some of the construction workers will have sufficient mobility to shift to the SMSAs where the jobs are; others, because of home ownership, children, preference, and other reasons, will not shift. The result is that in 1975 there will be some oversupply and unemployment in the construction industry group.

Any training program for the construction-industry group—whether school, state, federal, or union—needs to be cautious about expanding or continuing its activities. A detailed analysis of each occupation in the construction-industry group provides information on the specific occupations that will be directly affected. For example, the Technicians, Exc. Medical/Dental group, which includes draftsmen and surveyors, accounts for only 3 percent of the total employment in the construction-industry category. Training for surveyors and draftsmen is frequently offered in high schools and community colleges. If there is any stabilizing or decline in employment of technicians, it will significantly affect the already limited number of jobs available for graduates of these public school programs. This is a warning signal calling for in-depth study by any organization operating a training program in this area.

If you are interested in establishing the type of projection system described here, you must get the cooperation of the local State Employment Service office.

Currently Ventura County is starting Phase II and will use the 1970 census data in developing fully localized I-O matrices based on local occupational-axis ratios. It is also investigating other components of a "BEST" MPM system to be developed cooperatively with at least three other SMSAs within the state and; of course, with continued help from the local Employment Service and Bureau of Labor Statistics.

An advantage resulting from Phase I is that it provides the vocational educator and decision maker with an independent look at the 1975 labor market in his own SMSA. It does not rely entirely on the traditional employer/advisory committee forecast with all its inherent problems.

In addition, it is a comprehensive look at 160 occupational groups and 120 industry groups. It provides the big picture for the local SMSA in one series of tables. It is a major step forward in local manpower projection and in providing an essential tool for improved area planning. ❑

ECONOMIC NEWSLETTER

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Published by the Department of Business and Economics

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Vol. 3, No. 3 | Moorpark, California | May, 1972

Career Opportunities In Public Service

by
Dr. William Lawson and
Mrs. Florine Matthews

Approximately one out of every six persons in the U.S. is employed in the public services today. In Ventura County the ratio is one to four. This is the largest single cluster of jobs in the county's labor force. In this article, we analyze the public service cluster in Ventura County. The analysis is based on information generated by questionnaires that were mailed to tax supported employers in the county. To date, 85% have responded.

What is the career education occupational cluster concept? A career education cluster is composed of occupations that are affected by the same economic, social, and/or technological factors. In effect, a cluster, such as the public services cluster, denotes a series of occupations concerned with producing similar kinds of products or services. Table I indicates that the public services cluster is divided into occupational groups, job families, and specific jobs.

CHARACTERISTICS OF THE PUBLIC SERVICE CLUSTER INDUSTRIES

The Department of Human Resources Development reports that in Ventura County one out of three government workers is employed in the federal services sector. The rates of employment in the public service industries vary considerably between the federal, state, and local government. For example, the federal civilian employment on a per capita basis has been declining steadily for over two decades. This decline shows that federal government employment is not related to population growth as in local government employment. In 1971 Ventura County's population grew about four times faster than the nation's. Accordingly, local government employment in the county should grow much faster than federal government employment in the nation.

Table II presents an analysis of government employers according to industrial classification. The largest grouping of government employees is "business services" which has 55 agencies. Second in importance are "legal services" and "amusement and recreation services" which have 9 agencies each. These 3 groups account for 73 government agencies, or 48% of all government agencies. Table II also indicates that there are 123 local government agencies which represent 82% of total agencies. However, 34% of all government employees work for federal agencies even though federal agencies represent only 12% of the total.

Ventura County Government Employers by TYPE and SIC class

Table II

SIC INDUSTRY CLASSIFICATION*	TYPE OF GOVERNMENT EMPLOYER LOCAL	STATE	FEDERAL	TOTAL
Horticultural Services	4	1	0	5
Fish Hatcheries	0	1	0	1
Highways & Street Construction	2	0	0	2
Communication Services	2	0	0	2
Water Supply	4	0	0	4
Water & Sanitation Services	3	0	0	3
Sewage Systems	4	1	0	5
Refuse System	1	0	0	1
Irrigation System	1	0	0	1
Wholesale Trade	0	0	1	1
Insurance Carriers	6	0	0	6
Misc. Services to Dwellings & Other Buildings	1	0	0	1
Employment Agencies	0	1	0	1
Business, Management, Admin., Counseling, Secr., Protective Services	47	0	8	55
Hospitals	1	1	0	2
Health & Allied Services	6	2	0	8
Legal Services	9	0	0	9
Schools (Special Services)	1	1	0	2
Libraries	3	0	0	3
Vocational School	0	0	1	1
Museums & Art Galleries	1	0	0	1
Civic, Social & Fraternal Associations	1	0	0	1
Engineering & Architectural Services	1	0	0	1
Non Profit Educational Agency	3		1	4
Services Not Elsewhere Classified	0	0	1	1
Regular Government Functions	0	0	2	2
Agricultural Services	2	0	1	3
Forestry	0	0	1	1
Water Transportation	1	1	0	2
Transportation by Air	0	0	1	1
Electric, Gas & Sanitary Services	1	0	0	1
Misc. Business Services	0	0	1	1
Amusement & Recreation Services	8	1	0	9

*The Standard Industrial Classification (SIC) is a system in which agencies are categorized by the type of economic activity performed.

CHARACTERISTICS OF THE PUBLIC SERVICE OCCUPATIONS

The first table indicates that the national public cluster is composed of almost every job that exists in the private sector. However, there are jobs that are unique to public service. For example, jobs concerning regulatory services and records, public safety, educational services, and community development are almost exclusively public service activities.

Table I indicates another phenomenon that has occurred in the last several decades in all employment. e.g., the development of "career lattices" rather than the more traditional "career ladder" advancement path. A career lattice describes the opportunities for an employee to move vertically, horizontally or diagonally in an organization. Most employees do not now follow the vertical career ladder model of past years. For example, the young man entering Ventura County government as a sheriff deputy may eventually work in probation or juvenile delinquency activities within the Public Safety occupational group in the Public Service cluster (see Table I). He would have the same county employer, but he would actually work in different individual jobs within the several county departments mentioned.

Table I also indicates that most jobs are at the entry level. The lines connecting the job family to the specific job title are based, again, on the survey where these particular jobs would most likely be found in the county. The most frequently identified job of the Public Service Cluster is for clerk typists. Next in importance are law enforcement and firemen positions followed by water and sewerage operators. Finally, there are a number of new areas such as resource management and rural urban and community development activities that will be expanding the near future because of state and federal legislation and regulations. The health occupation group does not fit these expansion groups because most of federal funds for help will be directed towards private and non-profit organizations rather than government agencies.

EARNING AND WORKING CONDITIONS

Public Service employees' pay rates are set by a civil service schedule. The salary range determined by the survey indicated that starting salaries for the entry level positions with minimum experience and in education were between $2.50 and $3.50 per hour and ranged as high as $8.00 to $10.00 per hour based on extensive experience and/or education. Public Service employees have a wide range of fringe benefits including annual vacation, sick leave, paid holidays, low cost group life and health insurance programs and a retirement system. Some of these fringe benefits will vary from employer to employer and between the different levels of government involved. Most public service employees are appointed, based on detailed civil service requirements involving the merit system that is used almost exclusively for in-service promotions require written examination. The best opportunity for employment in government is in the entry level positions. The opportunities for moving in at the higher grade or salary levels from outside government services are limited. A public service survey indicated that most government employers rely on the civil service system announcements as their primary source for employees. Word of mouth and newspapers, and radio are second in importance.

WHERE TO OBTAIN FURTHER INFORMATION

Information on public service cluster opportunities may be obtained from numerous sources. Moorpark College and Ventura College offer programs of instruction in a variety of public service cluster career fields, and their placement offices have announcements of jobs for the county government opportunities. Additional information may be obtained from the California State Department of Human Resource Development and from local post offices.

In summary the public service cluster survey has indicated that there is a large number of opportunities within Ventura County and that these opportunities will be increasing in the next ten years - especially in local government. There are opportunities for an individual to work in a great variety of jobs and still be employed by a government agency. Most persons who enter government employment follow advancement paths based on the career lattice model rather than the career-ladder of yesterday. This means that a person preparing for work in the public service cluster should take a broad range of courses in schooling and determine what specific occupational field they have an interest in rather than concentrating on instruction and training in a specific entry level job.

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TABLE I

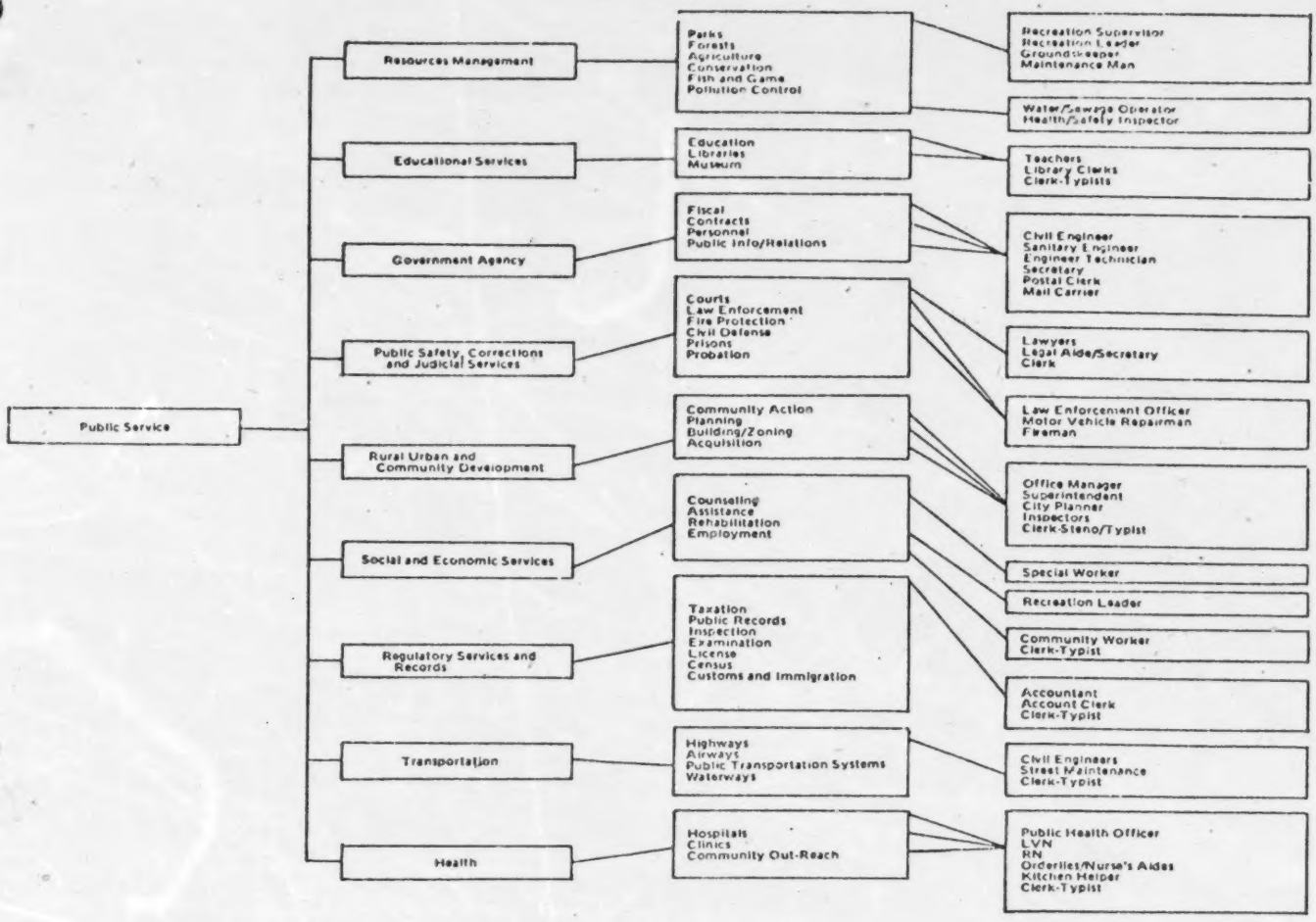

Table I based on P. J. Weagraff's public service occupations curriculum project, California State Department of Education.

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